NICs NETWORK INFORMATION CONNECTION

AN ESSENTIAL SUPPORT RESOURCE FROM THE INSTITUTE FOR NETWORK PROFESSIONALS

Effective Teaching

by **Darryl**Alder

In this article we identity principles of effective teaching and outline several teaching methods. We also explain the value and importance of this skill in leadership, because leaders are essentially teachers. The intent, of course, is to help you make effective teaching part of your operating style.

But you say, "I am not a technical instructor! Why do I need to learn about this skill?" The answer is simple. Hardly a day goes by when you don't learn or teach something. Life is full of discoveries we can turn into a chance for learning—or sharing what we've learned with someone else. And that is the point, leaders build their team by facilitating knowledge and skill sharing among group members.

If your goals include moving into management, you need to face the fact than an increasing number of winning organizations are teaching organizations. These companies win because they have good leaders who nurture the development of other leaders, their future leaders.

Noel M. Tichy and Eli Cohen, authors of *The Leadership Engine—How Winning Companies Build Leaders at Every Level* suggest, "The ultimate test of success for an organization is not whether it can win today, but whether it can keep winning tomorrow and the day after.

"Therefore the ultimate test for a leader is not whether he or she can make smart decisions and take decisive action, but whether he or she can teach others to be leaders and build an organization that remains successful even when he or she is not around."

Leaders treat every face-to-face encounter as a teaching and learning opportunity. Modeling the skills you have developed is a powerful way to teach. It's as if your students catch their learning, like come kind of beneficial infection. Similarly, you can learn a lot from good mentors. Their associations rub off on you.

What the Skill Can Do

Have you ever wondered how children learn to speak by imitating the speech of their parents and others? The average Spanish, English or German child cannot communicate without a knowledge of thousands of words first. Surprisingly this is all done without a formal teacher or classroom. Yet a great deal is learned, so some kind of teaching and learning is taking place.

Children model what they hear in a process of discovery, repetition and practice, acquiring a large vocabulary even before they can read. During the 1940's Shinichi Suzuki, a Japanese violinist, observed this process and developed a method of teaching children music based on this principle. His philosophy suggests a child who hears enough good music and has access to instruments, can

discover or learn to imitate musical sounds. Of course, he accelerates the process with playful instruction and coaching.

Hiromi, one of his students, during the first five months of her life, heard her brother play a Vavaldi Concerto over and over. As a test for this baby, Dr. Suzuki played a piece by Bach. He watched the child respond pleasantly since she was accustomed to classical tones and rhythms. Then he played the concerto by Vivaldi. The baby became very animated and moved her body to the music. Of this incident he recalls, " In this way, inspiration and interest are acquired involuntarily by an infant from everything he sees and hears, like a seed that is planted. This is what molds—forms—the character. That I thought, was clear from what I had seen.

"It is a frightening fact. By no means only words or music, but everything, good or bad, is absorbed."

Hiromi was performing by age 4 and composing award winning music and lyrics at age 13. Dr. Suzuki lets his student "catch" their learning by starting early, making it fun and offering positive examples along the way.

Understanding the Skill

Effective teaching is the process of providing knowledge and improving skill and attitudes.

• **Knowledge** is what a person learns through familiarity or experience. It's what you know.

• **Skill** is the ability to use what you know.

• **Attitude** includes the desire to do something (motivation) and the belief that you can do it (confidence). Can I do it? Will I do it?

As a network professional, you have a technical knowledge that far surpasses many of your coworkers. At the same time, you know there are many industry experts that know more than you do. These two facts suggest that first you have something to teach and second plenty to learn.

Effective teaching focuses on learning, not teaching. **For teaching to be effective, learning must take place.** That doesn't mean you

"A point of view is worth 50 IQ points."

Roger Enrico, CEO, PepsiCo

have to use a fancy powerpoint presentation to get a point across. Nor does it mean you can hold an instructor in contempt for not making a concept clear to you. You have responsibility in either case and in both you need to become a "manager of learning" if you are to succeed.

Managers of learning use formal instruction, casual interaction and coaching to help their people develop. In each of these settings, there are six consistent steps to effective teaching. The steps of do not always follow in precise order. Be flexible. Things will not always fit it into a single instructional period, but usually all six are part of good learning. Each follows:

Learning objectives. The very first thing you need to do is decide what to teach. Observing shortcomings in team members is one place to start. You could also do some assessment exercises, interviews or surveys. Management might also suggest standard competencies.

Another way is to ask yourself: "Who knows what? What are each member's critical skill areas? Are they capable of the tasks you need done? How is each member's attitude? Do they seem motivated? Confident?"

A pause to reflect on these questions will suggest some subjects. Other ideas come up spontaneously. Sometimes you can seize the moment and teach. Other times you will have to wait for a more structured setting, but be sure to record the need so it won't be forgotten.

Whatever you do, set specific objectives for team members. What will they be able to do differently when the presentation, demonstration, or session is over?

Materials and Equipment. Gather the items needed to facilitate this learning experience. Without the proper tools, you will have a hard time helping others learn as well as they could. This could include every day stuff you work with or in some cases you may need a white board or other equipment. You may even want an outside facilitator to help with what you are planning, but planning ahead is the key to knowing what materials you'll need.

Discovery. The initial phase of teaching to **find** out what team members already know about the subject. You don't want to bore them with

stale or unnecessary information. You do need to help them **find** out what they don't know. This gives them a reason to want to learn. It should be motivating, help you determine how much of the subject to cover and identify other team members who can teach some elements. Make it as interesting and relevant as you can.

A good discovery gets attention. I remember a teacher who asked a student shoot another over some manufactured dispute. Unknown to the class, the revolver was loaded with blanks. This was the discovery for a lively discussion on conflict resolution. It got our attention

Sometimes **mini-discoveries** just happen. Be on the alert for them**.** Imagine, for example, help desk functions are part of your job an you notice one team consistently needs basic client services. Luckily a couple of the group show an aptitude toward technology. Spend a little extra time teaching them, then challenge them to share what they know and organize a short training session for the group to be taught by their peers. This makes you a manager of learning and helps the group grow.

As you use effective teaching, there are many little discoveries. Each time you and a team member realize that something is worth teaching and learning, a discovery takes place. These are sometimes called "aha!" moments. That's when the light bulb goes on. Use them, and apply the techniques of effective teaching to make sure learning takes place.

Teaching-Learning. People learn by hearing, seeing, and doing. Tell them, show them, and then let them try it. Good communications skills are vital. Keep it two way to be effective. Check back to see if the learning objectives are being met and remember to focus on each individual learner not on your presentation.

Application. Make learning real. Let partici- pants practice the skill on their own. Computer labs are a great example of this in our industry.

Evaluation/Summary. Check the application phase. How did they do? How did you do? Did learning take place? Ask the six evaluation leadership skill questions (see NICs vol 3 #9).

This is your test as a teacher. If the learning objectives were met then summarize what you taught by restating the objectives. If the objectives were not met, then learning is not complete. You need to **recycle** the process. Use the techniques of teaching/learning and application to help get the skill across until you feel the objectives have been reached. Let those who did get it coach each other.

These six steps help any lesson plan. You can remember them with this senseless, but useful, acronym LOMDET/LAES.

Putting the Skill to Work

Using all the skills of leadership gets the process underway.

- Communication is a must so that you can determine appropriate learning objectives.
- Knowing and Using Team Resources helps identify who can help you teach.
- Understanding Team Needs and Charac- teristics suggests methods of instruction.
- Representing your team uncovers the passions and attitudes for improving knowledge and skill.
- Planning tasks and Evaluating work done, reveals areas that need improvement.

If you are trying to make these skills part of your style, effective teaching is a natural next step.

Summary

We are all in the process of learning or teaching some- thing, even if we don't intend to. Learning involves many discoveries, continuous evaluation, teaching/learning in several steps, and frequent application. When this process is evaluated, it leads to further discovery and a growing team.

Effective teaching is a critical skill for improving knowledge, skills, and attitudes. By effective teaching, a leader helps a group develop real ability to work together and to get the job done. So here's your chance to make a difference in your team, _just LOMDET/LAES your way to effective teaching.

L earning
O bjectives
M aterials
D iscovery
E xperience
T eaching /
L earning
A pplication
E valuation
S ummary
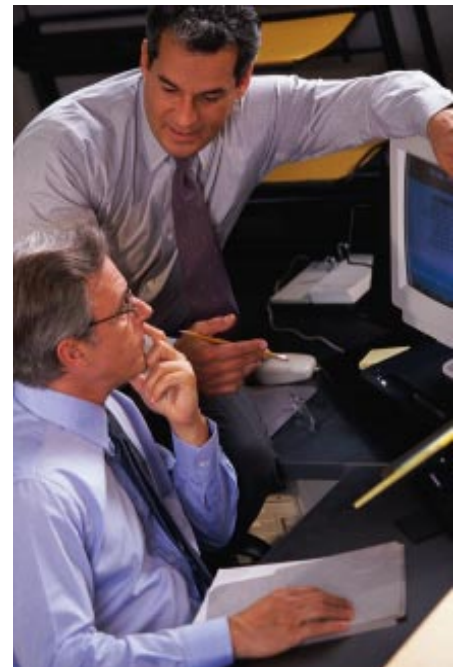
All About CPUs (Part I)

by **Lance**Jensen, Executive Software Tech Support Representative

Choosing the right CPU can be very important to your particular computing needs, both present and future. In this two-part article, we will examine various CPU types, their inner workings, and their various benefits.
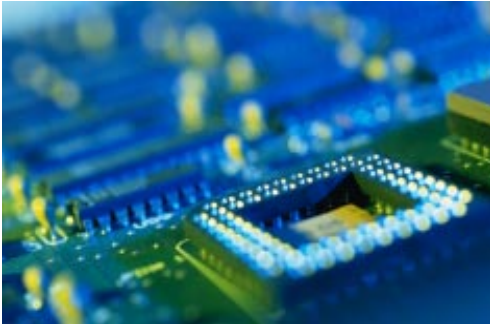
Cache - What it is and What it Does

Cache is a relatively small amount of memory (RAM) which is positioned close to the CPU (or in it), and is used to cut down on delays caused by the CPU having to wait for data to arrive. Cache is pipelined; this is a technique of breaking down instructions into sequential steps and using different resources to do each step. This means the instructions get done faster.

Level 1 (L1) cache has a small capacity but extremely fast speed. Level 2 (L2) is much larger, but slower. When the CPU needs data, it checks L1, then L2, then goes on to the system memory as a last resort. This kind of cache allows data to be transferred from memory while the CPU is processing (that's the "pipelined" part), thus speeding up overall performance. The keys to the speed-up are the bus speed (the speed at which data is transferred between the cache and the CPU) and the bus width (how many bits can be transferred simultaneously). The external bus speed (for data transfer between the CPU and motherboard) is usually 66Mhz. The external bus width is usually 64 bits.

Let's illustrate this with an example of a CPU with no cache and the same CPU with 256K of cache, with an internal speed of 150Mhz and an internal bus width of 300 bits. Now, it really takes more than one clock cycle to transfer a

bit of data, but for simplicity, I will assume one cycle = one transfer. The resulting number of bits per second will be wrong, but we are interested in the ratio between the two CPUs, and this ratio will be correct.

Data transferred from memory to the CPU with no cache comes 64 bits at a time at 66Mhz, or 4,224 million bits per second. For the CPU with cache, the data loads the cache at the same rate, but the CPU can perform other tasks while the cache is loading. The data transfers from the cache to the CPU at 300 bits at 150Mhz, or 45,000 million bits per second. That's more than ten times faster.

Note that the word "cache" is also used in Windows operating systems to mean a portion of the disk that is being used as an extension of memory. That is not a true cache, however, as seen above.

The CPU

The CPU (Central Processing Unit) is the glory hog. It gets most of the attention, and is the standard that most people believe determines their overall performance. While this usually is a mistaken belief, the CPU is still very important in determining performance. However, to make an informed decision about a CPU, you need to know what is available.

The current Intel processors are the 486, Pentium, Pentium Pro, and Pentium II. They are not interchangeable, as they all require different means of mounting them on the motherboard (mounts), so upgrading from one to another means you have to replace the motherboard.

The 486 is functionally much the same as the original Pentium, but slower. The clock speed is as low as 25Mhz. There's nothing wrong with it, it's a fine chip, but it is obsolete. I recommend not using a 486 for Windows NT; I have tried it and, while it does work, it is very slow.

Pentium

The original Pentium comes in speeds ranging from 75 to 200Mhz, using 3.3 volts power, and a 66Mhz at 5 volts. The Pentium with MMX technology ranges from 166 to 233Mhz, and uses 2.8 volts power. The MMX technology can handle more colors, better graphics, and full-screen full-motion video. According to Intel benchmarks, MMX is faster by 60% on multimedia, and 10-20% on other applications. But the difference in voltage means that even though both types of Pentium use the Socket 7 standard mount, some motherboards can not support an MMX CPU. If you want to upgrade a Pentium to MMX, first make sure your motherboard supports 2.8 volts.

On Pentium systems, the cache is in the motherboard, either built in or on a board similar to those used for system RAM. The amount of cache is either 0, 256K or 512K. The bus speed between the cache and the CPU is 66Mhz. Thus the effectiveness of cache depends on the bus width.

Pentium Pro

The Pentium Pro runs at 166 to 200Mhz. No Pentium Pro includes MMX. It uses the Socket 8 mount, so it is not interchangeable with the Pentium. The L2 cache is built in to the chip and is either 256K, 512K or 1MB. The bus speed between cache and the CPU is the same as the CPU clock speed, and the bus width is 300 bits. In addition, the Pentium Pro has two internal buses (DIB, or Dual Independent Bus) which can be used simultaneously, so one bus can be dedicated to cache flow (I'm sorry, I couldn't resist the pun).

The Pentium Pro is generally the best CPU for a server, because of the fast and large cache. Servers are primarily used to transfer data to other machines in the network. A Pentium Pro 200 with 1MB cache should give you the fastest data transfer rate of any Intel CPU.

Pentium II

The Pentium II is in effect a Pentium Pro with MMX technology. It comes with speeds of 233 to 300Mhz, but there will surely be faster models in the near future. It uses the same DIB architecture as the Pentium Pro, and includes a

built-in 512K L2 cache, with a bus speed of 1/2 the clock speed of the CPU. I believe the bus width is 300 bits, but could not confirm this.

The Pentium II mounts in a Slot 1 mount. Where Socket 7 is very common, and is used by other CPU manufacturers (Cyrix, AMD, etc.), Slot 1 is pretty much nailed down by Intel's patents. It is very unlikely that any other manufacturer will be able to use it, so when other companies come out with their own versions of the Pentium II, they will have to use some other mount. The other CPU vendors are already discussing a new open interface. We'll have either a completely different motherboard, or a motherboard with a slot to accept a "CPU card", with interchangeable mounts for different CPUs.

This is important when planning for future expansion. If the Pentium II is cheap enough and offers what the user community wants, Intel should remain the dominant CPU manufacturer. But if other companies produce a comparable CPU at a substantially lower cost, and use an open, competitive mount, this could change. Then an upgrade might require changing a lot more than just the CPU, and could get very expensive.

This brings us to the "non-Intel" manufacturers.

Choosing the right CPU can be very important to your particular computing needs, both present and future.

In the first part of this article, we examined Intel CPUs and their various differences. In this, the second part, we examine non-Intel CPUs and how they compare to Intel CPUs.

Lance Jensen is one of Executive Software's Tech Support reps, and has great experience with both Windows NT and Digital's OpenVMS. He can be reached at dknt_support@executive.com. Please feel free to write to him with questions or comments about this article.

Teaching by Proxy
A Review of Proxy Server 2 Video Training

by **Robert**J.Defendi

We've all been there. You want to learn a product, and you want to learn it fast. Maybe you're a lazy reader, and don't want to wade through 300+ pages of listening to Microsoft pat itself on the back. Maybe you set yourself a personal deadline and have whiled away the time watching videos of old NBA games and wishing the lockout would end. Maybe you've just been spending your time trying to pick up red-heads at the local bar.

Whatever the reason, now you want to learn a product, and you don't want to waste precious reading time you could be devoting to Grisham's newest young southern lawyer in his battle against a faceless corporation. You want to learn, and learn *now.*

I was in a similar situation. I needed, to maintain my personal deadlines, to learn and pass Proxy Server 2.0 in less than a week. While studying and passing TCP/IP. A stressful week, without a lot of time to spare.

Sure I could have just let the deadlines slip, I mean, they're just my personal deadlines, right? Ah, but with movies like *Saving Private Ryan* and *The Thin Red Line* hitting the market, this seemed like an intolerable sign of cowardice. I mean, it's just a hundred dollar test, not 40 mm mortars, and a vastly entrenched German juggernaut.

But I've thrown out enough ill conceived and hopelessly murky metaphors for one article. Suffice it to say that I had a lot of work to do, and no time to wade through 150,000 words of Microsoft propaganda.

So I'm kicking around, wasting dangerous amounts of time and pretending like I'm accomplishing something other than holding my chair down, when suddenly these instructional videos drift across my desk. They wore a little label, saying "Review Me" in proper Carrollian fashion.

It was as if the god of NT had spoken (a young upstart deity, but one with a potent marketing machine). The fates had decreed. The dice were thrown.

Now I've gotten myself into enough jams in my life. My most classic foibles include everything from saying "I'm sorry officer, its hard to read the speedometer through beer goggles" to dating a girl with a brother named Nunzio. I'm glad to tell you that this was not one of those foibles.

I know what your thinking. Your thinking: "Defendi, your several inches into this article and you haven't told me a damn thing about the product yet." Well, relax. Some of us are getting paid by the word.

I throw in the tapes, trembling (my apartment isn't really well heated) as I watch some guy who acts like he runs the company (probably because he does) announce the product, then we went into the program. I could end this paragraph there, but then it would have only one sentence, and my editor would be very angry.

When we teach Proxy in class, we give it about fourteen hours. The tapes take four. Still, these tapes are informative and teach even a bum like me a lot of good information in a very quick and efficient fashion.

Fast forward a couple of days. I click the affirmative and end the test. With baited breath (whatever that means), I wait as the computer sends a printout of my score to a distant laser-utilizing output device. Seconds pass as I wait to find out what that distant printer already knows. The seconds seem like hours…

Green bar! What a beautiful green bar, telling me that my 867 was more than enough to pass.

Hassanas (or however you spell it) and tribulations! I didn't blow a c-note.

So what were these remarkable videos like?

The instructor was clear and concise. His training was well thought out and led you along a logical progression to the well-defined goal of teaching you what the product was about. He was friendly and likeable in a slightly cornball manner (not that I should be throwing stones), and unlike me, didn't insist on throwing awkward, 38 word sentences into discussions of other peoples products.

No videos can take you all the way to complete understanding, but these took me from zero to *something* in four hours flat, and that some-thing was evidently enough of a basis to start my standard test-prep regime. Bless their video-making hearts.

I was able to see the product on screen and in use, and while this is no substitute to using it, it goes a long way from reading a book. I picked up its theory and even some application in a straightforward and professional manner. I even picked up a few pointers on how it's applied in the Real Word ™.

But don't get me wrong. No tape is going to replace reading the material or taking the class. There's only so much information that can be crammed into four hours. My test prep habits were shaken by this experience, and the time between watching the tape and taking the test were more frantic than my norm.

And yet it did provide a platform upon which to build my test prepping structure. The foundation upon which I built this edifice to the gods of cramming was strong enough to survive all the distractors and misleads and trick questions Microsoft felt the need to throw my way.

So the answer is, it is adequate, and that's high praise for an instructional video. It did the job, and I didn't waste my money on it (though I didn't spend any, either).

So there it is. It's a good start, but it's no replacement for studying. You still need to learn the product and learn it well. You still need to study until not even Bill Gates Himself can trick you. It doesn't replace the work, the sweat and the tears, but it gets you where you need to go.

I hope you learned something from reading this article. I learned a lot while writing it. For instance, no matter what kind of bachelor-gourmet you think yourself to be, Worchestershire is no substitute for Soy Sauce.

Good luck in your test-taking endeavors.

Robert J. Defendi, a former Corel employee, is currently studying for his MCSE.

In July 1998, **LearnKey, Inc.** released videotape instruction for Microsoft **Proxy Server 2.0**. It is a two-tape set, which features step-by-step instruction from expert trainer Ed Paulson. Paulson is an author, consultant and trainer who has authored numerous software-training books. He is a Certified Microsoft Trainer (MCT) and a Microsoft Certified System Engineer (MCSE) and is President of Technology and Communications Inc., an Austin, Texas based technology training and consulting company.

The comprehensive instruction given by Ed Paulson helps users understand the installation and implementa-tion of Proxy Server 2.0. It also provides the information that users need to prepare for MCP certification exam number 70-88.

Tape one of Proxy Server 2.0 training provides detailed instruction on the installation and configuration of the server. It also explains more advanced features like, reverse proxying and reverse hosting. Tape two goes deeper into the functions and capabilities of Proxy Server 2.0 with training on Proxy clients, IPX integration, and arrays and chaining. He also covers monitoring, optimization, and troubleshooting.

The Proxy Server 2.0 videocassettes are available for $169.95 for the two-tape series. For more information, contact LearnKey at 1845 West Sunset Boulevard, Saint George, Utah 84770, business Phone is 801/674-9733 or online at **http://www.learnkey.com**.

Who Are You? (Part I)
Y2K Alert

by **Howard**Belasco

Howard Belasco is a networking professional with superior communication skills, proven experience and unique skills in network administration, project management, training, and end-user support. He is especially skilled in analyzing situations, developing plans, designing solutions and motivating people.

Howard has been working as an independent consultant since 1992. As a consultant he implements, maintains, and manages Microsoft and Novell networking solutions, as well as other projects requiring computer expertise. His most recent projects include working as the Year 2000 Project Manager for a Fortune 100 trading group, as a Manager of Desktop Services for a Fortune 100 food company, as a mentor for a Fortune 100 insurance company, and as the Senior LAN Coordinator for a major Northeastern hospital.

Howard is a former Chairman of the Board of Directors of The Network Professional Association. He can be reached via E-mail: howard-belasco@worldnet.att.net

For so many, there is a sense of helplessness regarding the Year 2000 problems. There is very little direct impact that you can have on this Year 2000 problem, yet it is specifically those that can do so little that will be impacted so much. While you may not be able to change what will happen, there are things thing that you CAN do to make sure that your life will be impacted as little as possible by the government and any financial institution. After you have planned your physical situation (shelter, water, fire, and food) it is very important that you maintain and be able to prove your identity and your financial position.

With the potential disruption of services inherent in any computer problem, it behooves you to document everything about your life and work. You should have hard copies of your financial positions and your identity and you should be doing that now, while all systems are intact, rather than waiting for disruptions to begin.

Here in the United States, we are seldom called upon to prove who we are. We use our credit cards and ATM cards constantly and few question the bearer of the cards. At most, a picture ID is asked for, sometimes, to cash a check or when traveling. We almost always use a drivers license or on international flights, a passport and the merchant or inquiring agency is almost always satisfied. But what if the records are lost? What if our personal information is not available due to a down system or a power loss? How do we prove to someone who we are and what we have available in assets?

Maintaining Your Identification

During the first few months after the rollover it might be, at worst, impossible to renew existing ID information if systems are down, or

difficult and time consuming at best if systems are up but only sporadically or poorly manned or if data were to be corrupted or lost. Then there is the problem of ID theft. It should be assumed that merchants and government agencies would have more stringent requirements for identifying people. Picture ID's will be asked for more frequently. You will need to be able to prove absolutely who you are.

As you renew or acquire your ID documents, make sure that you do three things.

- **First**, keep copies of all written exchanges and send all formal inquiries and applications by certified mail if you can. I use FedEx, myself. It is more expensive but much easier and just as binding as you get a signature on the other end.

- **Second**, make notes of your conversations with these people and detail time and date of the call and to whom you are speaking, getting titles of the people you speak to if you can. It is a lot easier to remind someone you have dealt with about the problem then to have to describe it all from the beginning to a new person. People will become overwhelmed quickly as the number of inquiries picks up and you need to follow up and make sure that what you WANT to happen actually DOES happen.

- **Third**, make sure that when you get the actual document in your hands that you check it over very carefully to make sure that it is completely accurate. Age, height, color of eyes, date of birth, place of birth, any unusual or identifying marks such as scars, need for glasses, Social Security numbers, account numbers, etc. Any difference should be dealt with immediately. Make sure you make copies of all

formal identification documents. Carry the originals that you need with you, keeping the copies in your files.

Birth Certificate

The first piece of identification that I will urge you to get is a certified copy of your birth certificate. You will need this to get several other critical pieces of ID so this is the first step. Most of us will not be able to put our hands on a copy of our birth certificate or the one we have will usually be so old and beat up as to be not useful. Usually, most county clerks will take a credit card over the phone for a certified copy, or ask you to send in a check or money order. In New York City there is a 24-hour recording that gives residents specific instructions on how to get a certified copy of their birth certificate. Check in your local Yellow Pages under City Government (usually this is a specific section of the directory, not only a listing under "C") for directions in your local community. You want a certified copy with the raised or embossed seal of your city. I suggest you get 3 or 4 copies, just to make sure you will have enough.

There are two pieces of identification in the United States that always require a picture as part of the ID: a driver's license and a passport. It is in your best interests to have both. They are universally accepted pieces of identification and easily carried.

Passport

If you do not have a passport, I urge you to get one now. They are easy and quick to get. You will need a certified copy of your birth certificate and a recent photo of yourself. It usually takes about 2 weeks if you apply in person at a Passport Office. Look up under Federal Government for the nearest Passport Office to you. You do not have to go to a Passport Office to get a passport. The forms can be sent for, or you can pick them up and send them in. Realize that it will take longer this way. You do not have to be going on a trip to get a passport, as any U.S. citizen is entitled to have one. They expire after 10 years, so if you have a passport now, check it for expiration date. If it is going to expire in 1999 or 2000 then you can start the renewal process now.

Drivers License

Your driver's license is your primary means of identifying yourself. It is the most asked for ID. It MUST be correct and current. Take out your wallet now and look at your driver's license

Is all the information on it correct? Age? Height? Address? If any information is not correct, you MUST correct it now. Does it expire within the next 18 months? In New York you can renew your drivers license whenever you want to. If it is so in your state also, it is in your best interest to renew your license now. Have a new picture taken. It should look like you do now, not like you did 3 or 5 year ago. You want to make it as easy as possible for a stranger to make a positive ID of you quickly. If you do not drive you can still get a driver's license as an ID. Check with your local DMV for details.
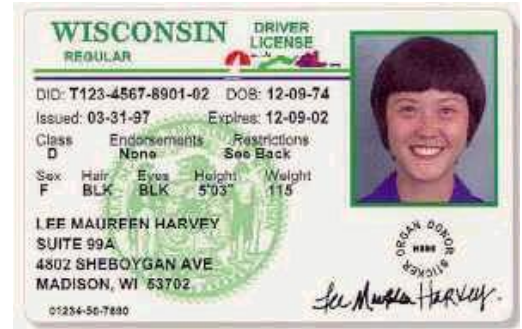
Voter Registration

Another good ID is your voter registration. It strengthens your local identity and costs you nothing more than your duty as a citizen. Some localities issue a Voter Registration Card that is stamped or signed each time you vote. If you are not a registered voter then you should register and vote in all the elections surrounding the Year 2000 rollover.

If you have moved and have not re-registered you should do that now. Call the League of Woman Voters in your area to find out your new local voting district and how to transfer your registration information. Ask for the approximate amount if time it should take. Make a note to call them back at that time if it did not happen. When you are notified of the transfer, check to make sure all the information is correct and get corrected any that is not. You should update EVERY PIECE of identifying paperwork you have and be certain the names and addresses are the same.

Continuing in the vein of updating EVERY-THING, let's turn to those ID's you don't have to carry around with you but none the less are critical to your continued enjoyment of government services.

Social Security Card

When was the last time you saw your real Social Security Card? If you can not find it in ten minutes, write to Social Security and get another one. Make sure your number and name are correct.

You also want to get a copy of your SS status. For this you will need Social Security Administration Form SSA-7004 Request for Earnings and Benefit Estimate Statement. This form is available by calling or visiting your local Social Security office, or you can download it over the Internet at www.ssa.gov.

If your name has changed as a result of marriage or divorce or any other reason, make sure your social security records reflect this. If you worked for 20 years as Jones and 20 years as Smith, you most likely will have only 20 years of each name, not 40 years of one and then the other. Check your spouse and children's cards to make sure that they are correct. Make all these corrections now, while the computer systems are still functioning "normally" and people have the time to spend making the corrections. I am sure that as we approach 2000 more and more people will be doing this, making the adjustment period longer and longer. Once things come back to normal you will need to repeat these documentation updates to make sure your records are the same and still accurate.

Selective Service

If you have never registered for the draft, and are over the age of 18, you are required to register with Selective Service. Actually, you need to do this within thirty days after your eighteenth birthday. You can get these forms from the post office, fill out a request for the form at www.sss.gov, or write to them at:

Selective Service System
P. 0. Box 94638
Palatine, IL 60094-94638
Telephone (847) 688-6888

If your eighteenth birthday (or your child's) falls near the end of 1999 or the beginning of year 2000, I would suggest that you complete the registration process early.

A caveat. There is some talk already about the possibility of calling up the Nation Guard or the Army to help during the possible Y2K crisis. If you have registered with the Selective Service, you face the possibility of being drafted to perform some duty. If you have NOT registered with the Selective Service, you face the possibility of potentially serious legal problems as a draft dodger. You can register "late" until your 26th birthday, but not after that. Doing this gives you yet another card for ID purposes. The more cards you have, the easier it is to prove you are REALLY you.

Military ID

If you have served in the United States Armed Services, you should have discharge papers (Form DD 214). Review them for accuracy: name, age, address, etc. If they are lost you can get duplicates by contacting your local Veterans Administration and asking for Standard Form 180. This form is also available over the Internet at www.va.gov. If you are eligible for VA benefits, or think you might be, you can get VA Form 26-1880 (Request for Determination of Eligibility and Available Loan Guarantee Entitlement) from this same web site. You will need a copy of Form DD 214 (Certificate of Release or Discharge From Active Duty) to send in with the Form 26-1880.

For those currently serving in the armed services, you need to make sure that your ID and dependants' IDs are accurate. Get a copy of your current assignment orders from your commanding officer and keep them updated.

Financial Preparations

Because the real potential exists for computer problems in 1999 and 2000, it behooves you to make sure that your financial information is accurate as of today and continues to be accurate right through until at least 6 months after the rollover.

Monthly Statements

The safest way, although not the easiest, is to establish a file on your existing status and then, each month, or what ever the regular billing period is, compare your incoming bills with your existing files and correct any discrepancies immediately. For instance, to make sure your credit card bills are accurate,

keep a file of your receipts during the month and compare these receipts with your monthly statement. If there is any discrepancy you need to correct it immediately.

When you call to make these corrections, take notes as to time of day, date, person speaking to and resolution agreed to. Then make sure you compare your next statement against your notes to make sure the correction has been made. This seems like a lot of work but if there is any discrepancy in your financial information, it will become more and more difficult to correct items because if financial programs really DO get flaky, more and more work will need to be done by hand. So more and more people will be needing more and more corrections and adjustments to be done by the same number of people. It will make for longer times to adjust errors and for the potential for errors to be made upon errors, making backtracking on statements even more time consuming.

You should take a look at your check book and credit card statements. Who have you paid money to in the past year on any kind of routine basis? Who do you have automatic monthly deductions made for or bills paid for? Who have you had automatic payroll deductions done for in the past year? For each of these people, make sure that the amounts being paid are actually what you had agreed to. Check the account numbers and any expiration dates. Compare these results each month to make sure they do not change and if they change, call immediately to find out why.

Remember to take notes on any calls and keep accurate records of time, date, party speaking to and disposition. If you are mailing information or forms or requests, remember to make copies of all your items you are sending. Send them by Certified mail or FedEx so you have a complete record of what was sent to whom and when and why as well as who received them and when they were received.

Credit Report
As part of setting up your initial financial information, it is very important that you get a copy of your credit report and verify that the information on it is correct. This is a basic review of your finances that really should be done every year but in light of the potential

computer disruptions looming for 1999 and 2000, this is something you want at or near the top your list of things to do.

Credit reports frequently contain errors. One source I read estimates that as many as 29 percent of credit reports have errors in them. Those errors that are already on your report could make credit difficult to get now and even more so in there are any computer problems.

Y2K problems could add errors to your report or change the information due to mis-reporting by merchants or other agencies. Errors to look for are differences in account numbers, checking account numbers, Social Security numbers, driver's license numbers, employment information, address, etc. The reports will be more difficult to correct after the rollover if you have no basis for comparison. Being able to show a hard copy of a report prior to the error will go a long way towards solving that problem quickly.

While there are local credit reporting companies, the three largest nationwide credit-reporting agencies in the U.S. are:

EQUIFAX
P.O. Box 105873
Atlanta, GA 30348
Phone 1-800-685-1111
Web address:
    http:\\www.equifax.com

EXPERIAN (Formerly TRW)
P.O. Box 2104
Allen, TX 75013-2104
Phone 1-888-397-3742
Web address:
    http:\\www.experian.com

Trans Union Corp.
P.O. Box 390
Springfield, PA 19064-0390
Phone 1-800-888-4213
Web address:
    http:\\www.transunion.com
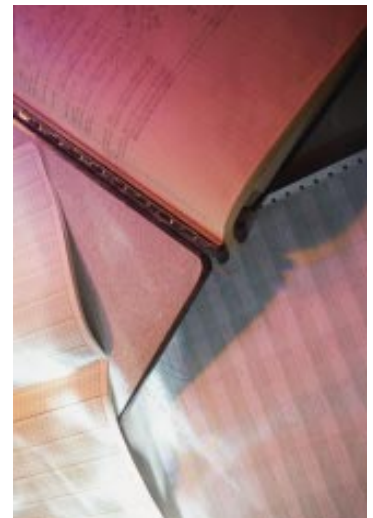
The credit report will cost approximately $8.00 (plus tax for some), and may cost $16.00 for a married couple. There are many exceptions and your best bet is to call on the phone or access their web sites for complete details.

Implementing Supporting Microsoft Windows NT Sever 4.0 in the Enterprise Exam Preparation

by **Rex**Moffitt

What to Know for the Exam

- How to recover from a failed disk or two in fault tolerance.
- How to troubleshoot a failed boot.
- How to upgrade a member server to a BDC/PDC.
- What the differences are between NTFS and FAT.
- How to perform directory replication.
- Domains, workgroups and trust relationships: advantages, and when to use what in which situations.
- How to resolve computer/host names to IP addresses.
- How to determine problems using the Performance Monitor. Administration utilities and what situations they are used for.
- How to transfer a NetWare server to an NT Server.
- Profiles and Policies.
- Which network protocols to use in various situations.
- How to use the log files to determine problems.
- How to create and use the setup and emer-gency repair diskettes.
- What the requirements are for different fault tolerance methods.
- How to backup and restore the registry.
- What the rights are for the built-in domain accounts.
- RAS.
- How to setup the Gateway Services for NetWare.
- WINS, DHCP, and DNS.
- How the browser services work.
- ARC naming convention.

Fault Tolerance

Disk Striping	Divides data into 64k blocks and spreads it equally among all disks in the array. Needs a minimum of two hard disks.
Disk Mirroring	Duplicates a partition on another physical disk.
Disk Duplexing	Duplicates a partition on another physical disk, which is connected to another Hard Drive Controller.
Disk Striping with parity	Distributes data and parity information across all disks in the array. The data and the parity information are arranged so they are always on separate disks. A parity stripe block exists for each row across the disk. The parity stripe is used for disk reconstruction in case of a failed disk. Supports a minimum of three disks and a maximum of thirty-two disks.
Volume Set	Merges numerous partitions into one drive mapping. Drives are read one at a time.

System and boot partitions cannot be part of a stripe or volume set, but can be a part of disk mirroring and duplexing partitions.

Speed factors

Disk striping will provide the astest read/write performance as it can read multiple disks at a time. Disk striping with parity is slower, as it has to write the parity information, but is still faster than disk mirroring and volume set. Disk

mirroring is slow due to the redundancy factor of writing the same information to two drives at once. Volume set can only read/write one drive at a time.

To recover from drive failure with disk mirroring, you must install the new drive, boot the system into NT, run disk administrator, break the mirror and then recreate the mirror.

To recover from drive failure with disk striping with parity, you must install the new drive, boot the system into NT, run disk administrator, and choose the Regenerate option.

To recover from multiple drive failure with disk striping with parity, you must install the new drives, boot the system into NT, and restore the system backup from tape. NT Setup

Winnt.exe is used for the regular Windows NT setup, or an installation through DOS or Windows 95. Can also be used to create the setup disks by running WINNT /OX.

Winnt32.exe is used to upgrade from another version of Windows NT.

To upgrade from a member server to a BDC or PDC, NT Server must be reinstalled. To downgrade from a PDC or BDC to a member server, NT Server must be reinstalled. To change a PDC to a BDC, or a BDC to a PDC, you must promote a BDC to a PDC in the Server Manager.

NT Setup

Winnt.exe is used for the regular Windows NT setup, or an installation through DOS or Windows 95. Can also be used to create the setup disks by running WINNT /OX.

Winnt32.exe is used to upgrade from another version of Windows NT.

To upgrade from a member server to a BDC or PDC, NT Server must be reinstalled. To downgrade from a PDC or BDC to a member server, NT Server must be reinstalled. To change a PDC to a BDC, or a BDC to a PDC, you must promote a BDC to a PDC in the Server Manager.

NTFS vs. FAT

FAT
- Files and directories on a FAT partition only contain the standard attributes of Volume, Read-Only, System and Hidden.
- Cannot set local security access on a FAT volume.
- Can convert the partition to NTFS by running convert.exe
- Booting with a DOS diskette and running defrag.exe can defragment a FAT partition
- File moved from a FAT partition to an NTFS partition retains their attributes and long-filename.

NTFS
- NTFS partitions contain the standard attributes, as well as security descriptors basing file access from user-level security.
- Can set local security access on an NTFS volume.
- Partition cannot be converted to FAT. The partition must be deleted and recreated as a FAT partition.
- NTFS partitions cannot be defragmented. To defragment an NTFS partition, it must be formatted and restored from backup.
- Files moved from an NTFS partition to a - - FAT partition do not retain their attributes or security descriptors, but will retain their long filenames.

Domains

- **Workgroup** - Recommended for networks containing under 20 users. Users in this type of network administer all shares and methods of access on their personal computers.
- **Single Domain** - No trust relationships are involved in this domain model. Network administration and management is all controlled from a central location. Can contain up to 40,000 user accounts, but is usually recommended for 20-500 users.
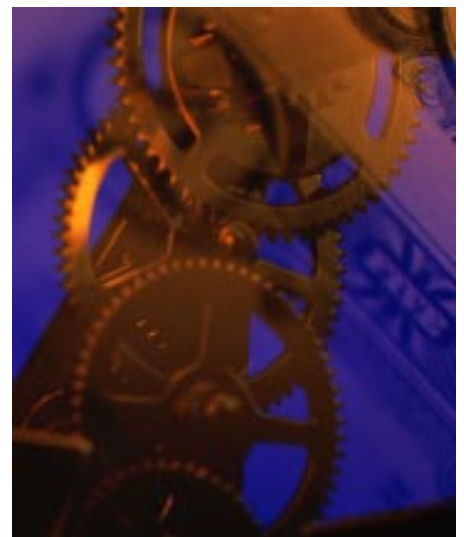
- **Single Master Domain** - Master domain is trusted by one or several single domains. The master domain provides central administration. Can contain up to 40,000 user accounts, and is usually recommended for 500-10,000 users.
- **Multiple Master Domain** - Several master domains are setup with complete trusts between each of them, and all single domains are setup to trust the master domains. Is usually recommended for more than 10,000 users.
- **Complete Trust Domain** - All domains in this model have complete trusts setup with each other.

You must remember how trusts work for the test.

Domain A trusts Domain B. Domain A is trusting Domain B to access Domain A's resources. Domain A is the trusting domain and Domain B is the trusted domain.
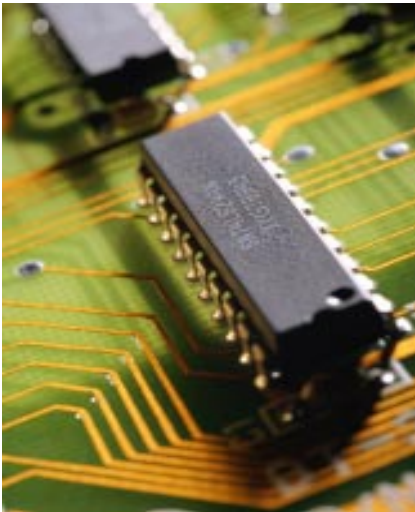
Virtual Memory

Virtual memory can be controlled in the System properties under the Performance tab.

The paging file size can be in/decreased here, and even distributed across multiple drives. The recommended initial paging file size equals the amount of RAM in the system plus 12mb.

Groups

- Global groups - General domain grouping used to access resources in its own domain. Can access resources in other domains by being a member of another domains local group.
- Local groups - Group used for local domain access to resources. Global groups from other domains go into these groups for resource access across domains.
- Backup Operators - Group designated for members to backup and restore computers from tape. Backup Operators can only backup and restore from tape when logged in locally to the computer.
- Account Operators - Group designated for members to manage user and group accounts.
- Server Operators - Group designated for members to manage resources, but cannot manage user accounts.
- Replicator - Group designated for NT computers to perform directory replication.

Computer Name Resolution

- DNS (Domain Name Services) - Used to resolve DNS host name to an IP address.
- WINS (Windows Internet Naming Service) - Used to resolve NetBIOS computer name to an IP address.
- HOSTS - File that contains mappings between DNS host names and their IP addresses.
- LMHOSTS - File that contains mappings between NetBIOS computer names and their IP addresses.
- WINS Proxy - Picks up b-node broadcast sent by a non-WINS enabled computer for NetBIOS computer name resolution, and forwards the request to a WINS server. WINS server replies to the WINS proxy, which then relays the reply to the PC. Is enabled by editing the registry.

NetWare

NWLink (IPX/SPX) is the protocol used by NT to allow NetWare systems to access its resources.

Gateway Services for NetWare can be implemented on your NT Server to provide a MS client system to access your NetWare server by using the NT Server as a gateway. You must have a group account setup on the NetWare server called NTGATEWAY. A user account must also be setup with proper rights and put in the NTGATEWAY group in order to have access.

If you decide to convert a NetWare server to an NT Server, you will first need to implement the

Gateway Services for NetWare on the NT Server. Once the conversion has completed, you will need to make sure all NetWare workstations have had the Microsoft (SMB) redirector installed on their systems to access the NT Server.

Make sure to remember that the frame types for the NWLink protocol must match the computer that the Server is trying to connect with. Unmatching frame types will cause connectivity problems between the two systems.

Server Stop Errors

In the System Properties Shutdown tab, there are options to configure where you would like the Server stop errors to be written. The errors are written to a .dmp file that is readable by the program dumpexam.exe

Profiles

Profiles are the user settings, which are loaded when a user logs in. They can contain desktop and start menu preferences. These files can be located either locally or on a server that has been mapped in the User Manager.

NTUser.dat and *.dat files are the typical, user-configurable profiles used.

NTUser.man and *.man files are read-only, so the user can configure their desktop, etc. however, the *.man file will not be updated. When the user logs in again, it will restore the original profile.

You may copy profiles using the menu located under System Properties.

Printers

NT Server 4.0 has the option to maintain drivers for different operating systems on the server. Each operating system uses different drivers.

For example, NT 3.51 systems cannot use NT 4.0 printer drivers. If the system, which is trying to connect to the printer off of the server, does not have drivers for the printer, or

if they are out of date, then the server will automatically install the updated drivers.

Print Pooling
Courtesy of Rick Buser (rbuser@superlink.net) we have this definition of print pooling (thanks Rick):

> Print Pooling is the method whereby you can create one "printer", as NT calls it, and actually have it refer to several of the exact models of "print devices". That way, NT can route print jobs for that "printer" to a print device that's currently free.
>
> Example: Say you have 4 HPLaserJet print devices...exactly the same configuration. You create one "printer"—we'll call it HPLaserJet — that users will see and send jobs to, but create a printer pool for this "printer" by assigning the 4 print devices to different ports. People send their print jobs to the "printer" they see in NT, but NT routes the job to an open "print device" in the "printer pool".
>
> The Sybex NT Server Study Guide simply defines it this way:
>
> "Printing Pool: A number of print devices controlled by the same printer. The printer directs the print job to an available print device in the pool."

- Availability - This option allows you to specify which hours the printer can be printed to.
- Priority - This option specifies which virtual printer should print first if other virtual printers are trying to print to the same physical printer at the same time. Priorities range from 1 - 99 with 1 being the lowest and 99 the highest.

You can change the directory containing the print spooler in the advanced server properties for the printer.

To remedy a stalled spooler, you will need to stop and restart the spooler services in the Server Manager.

Emergency Repair

To create an Emergency Repair diskette, you can choose to do so either during the installation of NT Server, or you can run rdisk.exe

To use the Emergency Repair diskette, you will need to boot the server with the NT installation boot diskettes, and choose to repair your NT Server with the Emergency Repair disk that was created.

RAS (Remote Access Services)

RAS is capable of using the following connection protocols: SLIP, PPP, and RAS.

RAS uses NetBEUI as the default network protocol, but can also use TCP/IP and IPX/SPX. TCP/IP will need to be used if you are using programs that utilize the Windows Sockets (Winsock) interface over the RAS services.

There are a few different options you can set in RAS for encryption settings.

- Allow any authentication including clear text- This will allow RAS to use a number of password authentication protocols including the Password Authentication Protocol (PAP) which uses a plain-text password authentication. This option is useful if you have a number of different types of RAS clients, or to support third-party RAS clients.
- Require encrypted authentication - This option will support any authentication used by RAS except PAP.
- Require Microsoft encrypted authentication - This option will only make use of Microsoft's CHAP (Challenge Handshake Authentication Protocol). All Microsoft operating systems use MS-CHAP by default.

- Require data encryption - This option will enable the encryption of all data sent to and from the RAS server.

RAS will write to a log file, which can be used for troubleshooting RAS services. In order to enable RAS to write to the log, you have to enable it in the Registry.

Browser Services

All NT Servers have browser services available. The Master browser will maintain a browse list, which contains a list of all workstations, servers and domains on the network. There can be only one master browser per subnet.

The PDC will always be the domain master browser. All BDC'S will be backup domain master browsers and are capable of becoming domain master browsers in the event of a PDC failure. All member servers are capable of becoming master browsers or backup browsers.

You can disable the ability of a server to become a master browser by making the proper changes in the registry.

Domain Synchronization

The registry contains settings, which set the time between synchronization of domain controllers. Sometimes this can cause much traffic. In order to reduce traffic, increase the value of the *Pulse* setting in the registry of the PDC, and decrease the value of the *PulseConcurrency* setting in the registry of the PDC.

How to be Successful

by **Deni**Berger

What makes a person successful? We often hear stories about how different people rise to the top. For example, Eric J. Ruff is the CEO of PowerQuest, the "Fastest Growing Company" in the state of Utah. He contributes the success of the company to "its innovative technology and innovative teams." Although the technology field is growing rapidly, success stories are not limited to software companies. We hear similar stories on the news, Internet, and even among our own family members.

Success means something different to every person. One individual may feel successful by just having a roof over his head, and food on the table. Another might feel success by making a six-figure salary. Even though each of us has different definitions of success there are certain characteristics that lead us there. This is especially true in the business world.

Getting Started

Proactivity is the first and foremost characteristic of a successful person. A book entitled *The 7 Habits of Highly Effective People*, written by Steven R Covey. In chapter one of the book, Covey establishes that the first habit people need to work on to be effective is to be proactive. He tells the story about Victor Frankl, a psychologist and a Jew that spent time in a Nazi concentration camp. While in the camp, Frankl came to learn many things. One thing that is most important he learned is he could take control of how he felt inside no matter what happened to him on the outside. A proactive person takes responsibility for their actions, while others make exceptions or excuses.

George and Alec Gallup preformed a survey to find what makes a person successful and compiled their findings in the book, *The Great American Success Story*. Some of the characteristics that they found were important are:

· Common Sense
· Self-reliance
· General Intelligence
· Concern for others
· Appropriate dress

<u>**Common sense**</u> means to have good judgement and is essential to being successful. Most of us know people who lack common sense. Having common sense helps a person discern good decisions from bad decisions, which allows them to prioritize and put what is important first.

<u>**Self-reliance**</u> starts with setting goals and achieving those goals on your own. Have you ever known a person in your life that cannot do anything

themselves? There are many people in the world that always have been able to rely on someone to get things done. A successful person is not like that. They are able to accomplish tasks alone.

To be successful, individuals must have **general intelligence**. This means, they need to know how to read, write, and speak. Having a broad vocabulary is important when dealing in business. It is also important to know how to read well and especially how to spell. Others sense that you have general intelligence. Ways to improve your skills are by just simply reading. For example, try ordering a subscription to a magazine or a newspaper. Take the time daily to read and to exercise your mind. You will be surprised at how fast you are able to learn and pick up new skills.

A good leader will be **concerned** about how he/she has affected others both positively and negatively. Many of us have had supervisors that didn't care what we thought and we all know how that feels. Such leaders lower morale and often drive employees away. To be a successful leader one must be empathetic. Showing compassion and understanding leads to respect all around you. Just remember that you never know who is watching.

Dress leads a key roll to an individual's success. Imagine what it would be like to walk into a courtroom if everyone there was wearing sweats. The atmosphere would be completely different. Dressing appropriately shows that you are serious about what you are doing.

Having a mentor is also a good step in becoming successful. There are many community programs that are willing to help a person find his/her success. Mentors often share helpful information about the field that you are looking into. They are for guidance. By speaking to a mentor, you can evaluate your own life and see if you are on the right track to what you want to become.
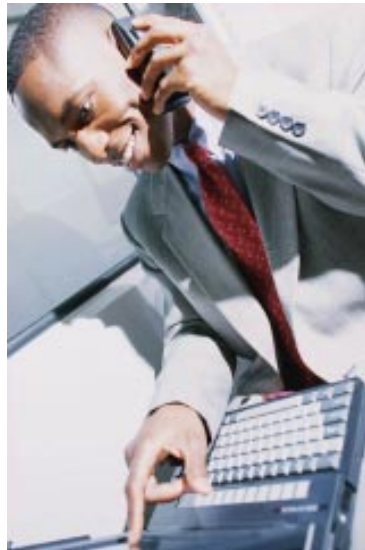
Making yourself known is also important. Supervisors are often caught up in other projects and they do not know what you do. When advancement opportunities come your way you may be passed up if the right people do not know what you do. Try making a To Do List of all of the things you need to do. Cross off tasks you have completed and keep a copy of all communication between you and your supervisor. When it comes time for reviews, show them your file. You'll be amazed at what that can do for you.

Success comes in different shapes and sizes. It takes work to be successful. By following these steps mentioned above you will make a great start. You'll find you may reach your goal earlier than you think.