

# NICs NETWORK INFORMATION CONNECTION

AN ESSENTIAL SUPPORT RESOURCE FROM THE INSTITUTE FOR NETWORK PROFESSIONALS

## Team Representation

by Darryl Alder

### What the Skill Can Do

Representing a group is one of the most interesting challenges facing a leader. When you get good at the skill, it can be rewarding. Mahatma Gandhi's Salt March is an interesting example of using the skill to get what you need and want.

In early spring 1930, Gandhi accompanied by 78 fellow Indians, set out on foot on a 200 mile trek to the sea. There they defied the government by making salt from seawater in disobedience to the Salt Act. This law prohibited Indians from making it themselves and forced them to buy it from government approved sources. The march was more symbolic than substantial, but it captured the headlines and hearts of the Indian people. Gandhi knew his people and he knew those who he was fighting too. Before spring was over the incident incited the whole country into revolution and he became the pivotal figure in Indian independence.

During this time William L. Shirer, a correspondent for the *Chicago Tribune*, observed both Hitler and Gandhi. In Hitler he saw a great orator using staged settings to move captive audiences to his will. Gandhi on the other hand was somehow "the manifestation of their [Indians] collective conscience." He often led them without speaking, using only his fellowship. He explained, "They felt in the presence of this great man that something immense was suddenly happening in their drab lives, that this saintly man in his loincloth cared about them, understood their wretched plight and somehow had the power, to do something about it." *Gandhi—A Memoir*, Shirer pp. 68-69.



Shirer explained that Gandhi understood two-way communication as part of effective representation and demonstrated it in an interview with a college teacher, who said: "For these masses Gandhi holds out the only light, the only hope there is. They want to see the man who, they are told, goes around half naked like themselves and yet who dares to present their grievances to the mighty, bemedaled white Viceroy himself." *Gandhi—A Memoir*, Shirer pp. 70-71.

Gandhi eventually got what he was after, but the process first started with a series of careful leadership steps. Gandhi worked at communication with the people who would follow him, as well

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as, those in control; he also came to know and use the resources of his people; and he understood their needs and characteristics. Only after these preparations could he represent them with great confidence and courage.

Of course, leading your team may not be so noble a cause as Gandhi's, but the same leadership skills can be effective for you. When leaders represent their group, they must communicate effectively, know the group's resources and understand the needs and characteristics of its members. Are members ready, willing, and able to do a job? Do they have the knowledge, skills, and attitudes necessary? How will they feel about the leader's decisions when representing them?

### **The Repeater:**

A leader representing a group simply regenerates the message and passes it on to every one just as it was sent. A good skill to develop, but not everyone should hear everything your team is mulling over.

### **The Bridge:**

This leader faithfully passes on the message but decides whether to get it over to management or just keep it within the group where it belongs. This is an even better skill to develop

### **The Router:**

A leader that connects several different layers of middle management, and top management to their work group is like a router. The leader intelligently chooses the most effective route for a message or issue to get from one group to another.

### **The Gateway:**

Leaders with the greatest representation skills will act as gateways. They can translate meanings and exchange concepts between internal and external groups. This is the Gandhi level of representation.

## **Understanding the Skill**

*The American Heritage Dictionary* defines representing as

- to stand for or symbolize something
- to present clearly to the mind
- to draw attention to, by way of remonstrance or protest
- to serve as the official and authorized delegate or agent for
- to act as a spokesperson for
- to be the equivalent of

Each part of this definition is a component of good representation. However it may seem like a lot to try to take on all at once, so let's have a little fun by comparing this leadership skill to various connecting devices on a network. Hopefully this exercise will make the skill more understandable. To do this you must first imagine yourself as the device listed to the right, your work group is the LAN, the rest of the company is your WAN and others outside your company cannot easily understand your "protocols."

## **Putting the Skill into Practice**

Developing and strengthening this skill can be tough, but you don't have to do it all at once. Practice by starting with the first type of representing in our connecting device model, then move on until you are at the gateway level. By doing it this way it won't seem so hard and, at times, can be quite amusing as you pass "packets of information" along, watching what happens.

Another simple place to start is by being loyal to those not present. If you find yourself in a discussion about someone, imagine he/she is there. Try to be their advocate and see that things are discussed and done the way they would like to have them done. Defend them and don't tolerate bad-mouthing.

As a leader representing a group you will usually face one of two situations:

- representation without consultation
- representation with consultation

In the first situation there is no opportunity to consult the team about a decision. It is loyalty

to the absent again but on a bigger scale. When leaders don't have a chance to consult the group, they must always make decisions based on their understanding of the group. You should have their consent or permission to use your own judgement. Such trust and respect comes over time by faithfully representing your team's desires and needs.



In the second situation you can meet as a group and talk things over. When you know you will be representing one group to another, do your homework by getting all the facts available. Decide the nature of the situation and try to determine your team's reaction. Be alert and be dedicated to them. Write down what you've seen and felt to make it a solid part of yourself, even if you don't quite agree personally. This element of representing is very difficult for many people to master since you must subordinate your own views and needs and become the voice for your group. Then, go and represent your group, offering the facts as clearly as possible. Give your team's reaction, feelings and position on the matter. Respect the opinions of those to whom you are trying to convey this information. Also consider any personality problems that seem to be rising. During the whole process stay alert and take

more notes so that you can faithfully represent this group back to your team. This is the real test of your mastery of representation's two-way process: to whomever you've reported, you must also effectively represent them back to your team.

When you are back with your team present the facts as straightforwardly as possible. Try to set aside your interpretations and feelings as you explain decisions. Do your best to fairly represent others back to your team.

Another way to think of this is like wearing two hats, but not your *own* hat. For example a team leader:

- 1 Represents the views of the team to others—such as a team leader to management.
- 2 Represents the views of the others back to the team—serving as a member of middle management to the work group.

And you need to do all of this without inserting too much of your own reflection. If you think about this skill, it is an awesome responsibility!

When you've gone through these steps once, you may find you need to start the process over again. Work until there is mutual understanding and respect. If the situation becomes hopeless, then strategically and thoughtfully plan your "March to the Sea."

## Summary

With knowledge of resources, skill in communicating, and an understanding of the needs and characteristics of the group, the leader is prepared to represent the group. Representing the group links your team to other groups and vice versa, through meetings, discussions and other communication media. It is a practical example of democracy in action. The group has both rights and responsibilities. Reaching decisions between different viewpoints and representing the group helps the group work together and improves understanding.

# Networking Essentials Exam Preparation

by RexMoffitt

## Exam Details

Exam Name: **Networking Essentials**

Exam Number: **070-058**

Number of Questions: **10 standard/15-25 adaptive**

Passing Score: **552/1000**

Time to take Exam: **90 minutes**

Simulations on Exam: **No**

Standard or Adaptive: **Adaptive**

Certifications Exam Counts Toward: **MCSE Core**

I recommend you take this exam before all others. You will understand networking better, and the information can be applied to all of the remaining exams. If you don't have previous networking experience, and are having trouble with the concepts you may want to consider moving on to another exam. When you feel more comfortable with the networking concepts you can come back to this one.

It is hard to gain hands-on experience for this exam. Find a friend in networking, and have them explain basic theories, cabling, and troubleshooting. Concentrate on studying cabling, LAN technologies (ATM, Ethernet, Token Ring, etc.) troubleshooting, the OSI model, protocols, and LAN enhancement components.

## What to Know

- Know what to choose in environments to connect networks (i.e. whether to use a bridge or a router, etc.)
- Know what a mesh topology is
- Know what you will need to do to upgrade to 100Mbps Ethernet
- Know how to implement NetBIOS schemes in LAN and WAN environments.
- Know Network diagnostic tools
- Know that NDIS and ODI are used to bind multiple protocols to a single NIC
- Differences between SLIP and PPP communications
- Know what the redirector does
- Know what the RIP protocol is and how it is used
- Know what will cause TCP/IP problems
- Know the different coaxial and UTP cables and their uses

- Know the differences between topologies (star, bus, ring, mesh)
- Know what you need to connect anything to a Novell network
- Know the transmission speeds of the networks
- Know how to reduce broadcast storms when using routers, bridges, routers, etc
- Know what protocols to use with certain network configurations, including LAN Enhancement Components and computer/OS types
- Know how to use diagnostic tools to find faulty cables
- Know where LAN enhancement components reside on the OSI model. What each level of the OSI model covers
- Know differences between HOSTS and LMHOSTS files
- LMHOSTS – File that contains mappings between NetBios names and their IP addresses
- HOSTS – File that contains mappings between DNS host names and their IP addresses
- Know what WINS, DNS and DHCP services perform
- DNS (Domain Name Services) – Used to resolve DNS host name to an IP address
- WINS (Windows Internet Naming Services) – Used to resolve NetBIOS name to an IP address
- Know how MAC addresses are used and obtained. MAC addresses are unique from the manufacturer
- Know that NWLink is great for peer-to-peer if NetBEUI is not a choice
- Know that SMB is sits in the Presentation Layer
- Know that DLC sits in the Network Layer
- Know that Windows NT Server, NT Workstation, Windows for Workgroup and Windows 95 can all do peer-to-peer networking
- Know your IRQ's
- Know 802.3, 802.4, and 802.5 and what they are all related to 10Base2, 10BaseT, Token Ring, etc

## Standard Topologies

**BUS** – A single cable (trunk) that connects all computers in a single line.

**STAR** – Computers connect to a centralized hub via cable segments

**RING** – Connects all computers on a single cable. Ends are not terminated, but form a full loop connecting the last computer to the first computer.

**MESH** – Commonly used in WAN configurations. Routers are connected to multiple links

for redundancy and to give the ability to determine the quickest route to a destination.

## Access Methods

**CSMA/CD** – Collision Detection; listens to cable prior to sending data (Ethernet)

**CAMA/CA** – Collision Avoidance: Announces intention to send data. (Apple Talk)

**Token Passing** – Token revolves around ring, computer which has token is permitted to send the data. (Token Ring)

## Cables

**Thinnet** Coaxial - .25 inches thick, carries signal 185 meters. Known as RG-58 family, and has a 50 ohm impedance. When troubleshooting Thinnet coaxial cable, the cable terminator must read 50ohms, and connector must measure infinite.

### Types of Thinnet Coaxial

RG-59 /U Solid Copper Core

RG-58 A/U Stranded Wire Core

RG-58 C/U Military Spec. of RG-58 A/U

RG-59 Broadband transmission (Television Cable)

RG-62 ArcNet Network Cable

**Thicknet** Coaxial - .5 inches thick, carries signal 500 meters. A transceiver (Vampire Tap) is used to make a physical connection with the Thicknet core.

**Unshielded Twisted Pair** – Twisted wiring, carries signal 100 meters. Is susceptible to crosstalk

### UTP/STP Category Speeds

**Cat 2** 4 mbps

**Cat 3** 10 mbps

**Cat 4** 16 mbps

**Cat 5** 100 mbps



### Shielded Twisted Pair –

Twisted pair wiring, carries signal 100 meters. Has foil or braided jacket around wiring to help reduce crosstalk and to prevent electromagnetic interference.

**Fiber-Optic** – Carries light pulse signals through glass core at speeds of between 100Mbps – 200,000Mbps

## Cable Problems

**Attenuation** - The degrading of a signal as it travels farther from its origination.

**Crosstalk** – Signal overflow from one wire to another adjacent wire.

**Jitter** – Instability in a signal wave; Caused by signal interference or an unbalanced FDDI ring or Token Ring.

**Beaconing** – Computers are used to detect network faults, then transmit the fault signal to the server. (Usually with Token Ring Networks.)

## Signal Transmissions

**Baseband** – Uses digital signaling over a single frequency. Transmits bidirectionally.

**Broadband** – Uses analog signaling over a range of frequencies. Transmits unidirectional. Uses amplifiers for signal regeneration.

## OSI Model

### Application Layer

Allows applications to use the network.

Handles network access, flow control and error recovery.

### Presentation Layer

Translates data into a form usable by the application layer. The redirector operates here. Responsible for protocol conversion, translating and encrypting data, and managing data compression.

### Session Layer

Allows applications on connecting systems to establish a session. Provides synchronization between communicating computers.

### Transport Layer

Responsible for packet handling. Ensures error-free delivery. Repackage message, divides messages into smaller packets, and handles error handling.

### Network Layer

Translates system names into addresses.

Responsible for addressing, determining routes for sending, managing network traffic problems, packet switching, routing, data congestion, and reassembling data.

### Data Link Layer

Sends data from network layer to physical layer. Manages physical layer communications between connecting systems. LLC - (802.2) Manages link control and defines Sap's (Service Access Points). **MAC** (802.3, 802.4, 802.5, 802.12) Communicates with adapter card.

### Physical Layer

Transmits data over a physical medium.

Defines cables, cards, and physical aspects.

## Protocols

**Routable** - TCP/IP, IPX/SPX, OSI, AppleTalk, DECnet, XNS.

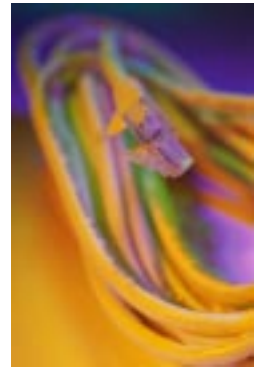
**Non-routable** - NetBEUI, DLC, LAT.

**NetBEUI** - Microsoft protocol designed for small LANs; non-routable. Not compatible with UNIX networks.

**IPX/SPX** - Fast protocol for small and large Novell networks; is routable. Also known in NT as **NWLink**.

**TCP/IP** - Internet protocol; is routable. Used by UNIX networks.

**DECnet** - Defines communications over FDDI MANs; is routable.



**AppleTalk** - Apple protocol designed for small LAN file and print sharing; is routable.

### Network Diagnostic Tool Tool and Function

**Digital VoltMeters (DVM)** Measures voltage passing through a resistance. Primarily used for network cable troubleshooting.

**Time-Domain Reflectors (TDRs)** Sends sonar-like pulses to look for breaks, shorts or crimps in cables. Can locate a break within a few feet of actual fault.

**Oscilloscope** Measures amount of signal voltage per unit of time. Displays crimps, shorts, opens, etc.

**Network Monitor** Examines packet types, errors and traffic to and from each computer on a network.

**Protocol Analyzer** Look inside the packet to determine cause of problem. Contains built in Time-Domain Reflector. Gives insights to many problems including connection errors, bottlenecks, traffic problems, protocol problems, etc.

### Multiple Disk Sets

Fault Tolerant Systems protect data by duplicating data or by placing data in different physical sources.

#### RAID Functions

**Level 0** Disk Striping Divides data into 64k blocks and spreads it equally among all disks in the array. Is not fault tolerant.

**Level 1** Disk Mirroring duplicates a partition on another physical disk. Disk Duplexing duplicates a partition on another physical disk that is connected to another Hard Drive Controller.

**Level 2** Disk Striping w/ ECC Data blocks are broken up and distributed across all drives in array with error checking.

**Level 3** Disk Striping w/ ECC stored as parity Data blocks are broken up and distributed

across all drives in array with one drive dedicated to storing parity data.

**Level 4** Disk Striping with large blocks complete blocks of data are distributed across all drives in the array.

**Level 5** Disk Striping with parity Distributes data and parity information across all disks in the array. The data and the parity informa-



tion 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.

Windows NT supports RAID Levels 0, 1, and 5.

### Additional Study Tips

- If you're unsure about the answer for the WAN related questions answer ATM.
- Gateway uses Layer 7,6,5,4, OSI layers – Application, Presentation, Session, and Transport
- ISDN is going to replace analog phone line.
- RG-58/U and RG-58 A/U cables can't be used together.
- An ohm-meter to measure the end of the coax cable if the reading is 0, replace it.
- TCP is Transport protocol and IP is with IPX.

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Please contact us at [info@inpnet.org](mailto:info@inpnet.org) if you have any questions about this program or your Institute membership status.

# Using Additional Characters in Your Writing

by Keith Parsons

Have you ever wondered how to access those ‘extra’ characters to make your writing look more professional? Well here is a little table to make your writing look like it was professionally typeset.

The typical computer font includes 256 characters. These include Upper and Lower case letters, numbers, and a couple of non-english characters.

Even though you can’t access these characters directly by pressing a single key, you can use your keyboard’s numeric keypad and a special ‘code’ add them to your document.

With the Num Lock key enabled, you simply hold down the Alt key and type the character number on the numeric keypad.

Good luck and enjoy these ‘extra’ characters.

©	Copyright	Indicates a copyright on marked material	Alt+0169
®	Registered Trademark	Registered with the US Patent and Trademark Office	Alt+0174
™	Trademark	Marked material includes a trademark	Alt+0153
¢	Cent Sign	Cents	Alt+0162
f	Florin	Dutch Guilder	Alt+0131
£	Pound	British Pound	Alt+0163
¥	Yen	Japanese Yen	Alt+0165
°	Degree	Indicates Degrees of a compass, temperature, etc.	Alt+0176
÷	Division	Value precedes the sign divided by the following value	Alt+0247
¼	One Quarter	Fraction	Alt+0188
½	One Half	Fraction	Alt+0189
¾	Three Quarters	Fraction	Alt+0190
×	Multiplication	Multiplication Symbol	Alt+0188
±	Plus or Minus	Plus or Minus Symbol	Alt+0177
~	Swung Dash	Used to show similarity	Alt+0126
•	Bullet	Separates items in a list	Alt+0149
...	Ellipse	Indicates omission of information within a passage	Alt+0133
—	Em Dash	A change in thought or emphasis within a sentence	Alt+0151
–	En Dash	Connects continuing numbers as in 14–22	Alt+0150
-	Hyphen	Divides compound words	- Key
“ ”	Double Quotation Marks	Enclose direct quotes, titles, or borrowed words	Alt+0147 Alt+0148
‘ ’	Single Quotation Marks	Enclose a quotation within a quotation	Alt+0145 Alt+0146
’	Apostrophe	Used in place of omitted letters like can’t	Alt+0146
†	Dagger	Indicates death date, or a footnote with same symbol	Alt+0134
‡	Double Dagger	Directs reader to footnote with same symbol	Alt+0135
¶	Pilcrow	Marks a paragraph break	Alt+0182
§	Section	marks the beginning of a section	Alt+0167
μ	Micro Sign	Part of an abbreviation for microXXX	Alt+0181
“	Double Prime	Indicates a measurement for inches or seconds	Shift+’
‘	Prime	Indicates measurement in feet or minutes	‘ Key

# From the Testing Lab – Meridian Data’s Snap Server

by EdKrach

How long would it take you to add 16 GB of storage to your server? Would your users be offline during the upgrade? Perhaps you would do it late in the evening or on a weekend. What if you could add 16 GB of storage to your network in a couple of minutes without taking the server down or touching a screwdriver. Well, you can now with Meridian Data’s Snap Server.

The Snap! Server was designed for small to medium sized workgroup networks. Snap! Server is built around a single-board, 32-bit computer, running a compact, 32-bit multitasking OS kernel plus network protocol stacks and file system management tools. The software is stored in FLASH memory that lets you download software upgrades from the Snap Server Web site ([www.snapserver.com](http://www.snapserver.com)). The system is optimized for I/O performance and data handling, with industry standard EIDE controller and high-performance, major-brand disk drives. It’s small size and lightweight will let you place it up on a shelf in your server room or even on your desk.

I had noticed the Snap Server ads in all the trade magazines and it sparked my interest, so I fired off an email and asked for a unit to review. Meridian Data sent a 6 GB unit to be tested at the Institute’s lab and the unit flawlessly lived up to its name. The installation was a snap. It took me all of 10 minutes to take it out of the box, set it on the lab rack, plug in the power cord, connect it to a Fast Ethernet hub, and turn it on. Its auto sensing 10/100BaseT connected at 100 Mbits. The Snap Server is pre-configured for IPX,

NetBEUI, and TCP/IP (using DHCP for automatic IP address assignment). I used the SNAP IP utility to assign a permanent IP address, which took all of 10 seconds. Afterwards, I immediately found the newly installed Snap server via Network Neighborhood on my Windows 95 workstation.

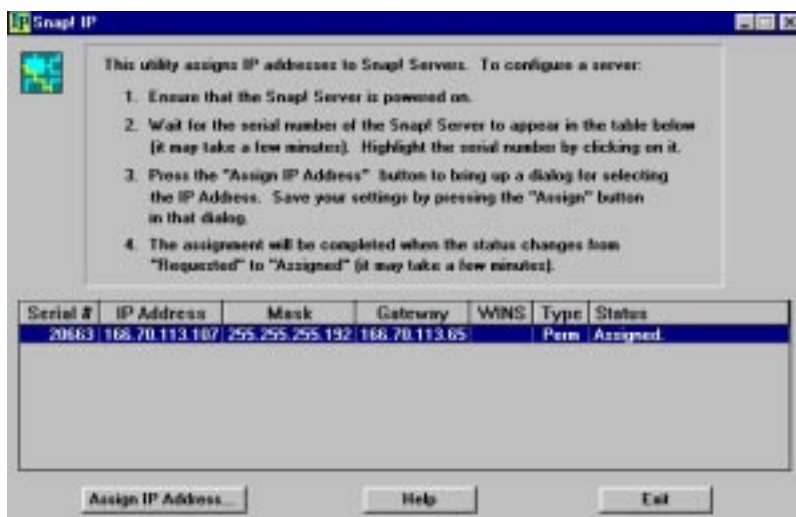
Configuring the server was a snap (as I’m sure the pun is intended). The Snap Server has a built in HTML based configuration tool that is very easy to use.



All you need is a browser. Actually, the Snap Server can function as a web server, but at the moment, it only supports HTTP 1.0. I’ve accessed it from home via an Internet Dial-up and was able to download files from it after providing a user name and password. This feature can be turned off if it is not desired or tighter security is needed. I personally like the idea of having a few GB of files available to me via the web. The administration features will also function over a dial-up connection, which makes remote management even easier.

The Snap Server emulates a NetWare 3.12 server, so it does not support NDS, but security can be configured with SYSCON or NWADMIN. Setting up security is straightforward in an NT or Windows 95 peer environment, though it needs to be done through the HTML interface.

The Snap Server showed itself to be an easy, cost effective way to add more storage capacity to a network without disturbing users or opening up an existing server. In some cases, adding 16 GB of additional storage to a Novell network would require the purchase of additional RAM, but with Snap Server, you just plug it in. It took me only a few minutes to add 6 GB of shared storage to a network. The current record for a Snap Server installation is just under 47 seconds. That’s pretty quick in my book for adding storage to a NetWare, NT or Unix network.





# NT Tips & Tricks

by ToddHindmarsh

The GUI interface of NT is great to work with but I sometimes want a little more from the functionality of the OS. Occasionally I bump into a useful tip or trick that is undocumented or not well known. I will be sharing some of those with you in this article. If you have any tips and tricks that you would like to share with everyone for future articles please feel free to send them in. You can send them to [tips@inpnet.org](mailto:tips@inpnet.org).

A great way to keep your information secure is to make the shares hidden by adding a "\$" to the end of the share name. This keeps people from being able to see your directories and snooping around where you haven't invited them. You can still browse the hidden shares by accessing them through the run command. For instance, if you have an RnD share that you have shared as RnD\$ making it a hidden share and that volume is on a server named Development, you would type the following in the run command: `\\Development\RnD$`. This would open an Explorer window at the root of RnD\$.

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## Right click on the directory that you want to be in at a command prompt and jump there with a simple click of the mouse

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There are times that I need to get to a command prompt several directories deep in the tree. It's kind of a nuisance to have to start at the root of the drive after going to a command prompt and navigate down the tree to get where I just was. Wouldn't it be nice if I could simply jump to a command prompt and keep my position in the tree? Here's how to accomplish this handy shortcut that will allow you to right click on the directory that you want to be in at a command prompt and jump there with a simple click of the mouse. Start NT Explorer,

select View, Folder Options, and the File Types tab. Choose the "Folder" registered file type, then click edit. Add a New Action and name it what ever you want, something like Open Command Prompt Here. Give the full path to the cmd.exe file in the "Application used to perform this action" box. Usually `c:\winnt\system32\cmd.exe`.

Does it irritate you that you can't map a drive to a subdirectory? Especially in the case of Home Directories?.....Me too! Well you don't have to put up with that any more. There is a way around this shortcoming. It's called the SUBST command. No more browsing others' Home directories. With the SUBST command you can map a drive directly to any directory in a logon script. You simply provide the UNC to the directory. Do you remember the NetWare Map command? Here is the syntax:

`SUBST h: \\logonserver\users\%username%`

Where "users" represents the directory that holds your Home directories, and %username% is the variable for the logon name of the user. The above command maps the H: drive to the home directory of the user logging on.



Occasionally individual files become corrupted making it impossible to reboot a server. For the sake of saving time and avoiding the need to do a complete restore of a server you may want to prepare your server by installing NT Workstation before you install NT Server, (in a different directory of course). This will allow you to access the NTFS partition and simply replace a missing or corrupted file. If you choose to install the Workstation OS after the server is already installed, make sure you change the default OS to Server in the Startup/Shutdown tab of the System Properties in Control Panel.

Service Pack 4 is out. Look for it on the Volume 3 CD. 'Til next time explore the contents of the Technical Resource CD's and check out the utilities, documentation and software available.

# Need to Prepare for a Certification Exam?

by DeniBerger

**Working toward a certification?** Tired of the frustration that comes with it? Well, you're not alone. Many of us are working toward the same goal. With many sleepless nights and endless days of studying we find that getting certified is sometimes frustrating. What exactly must you do to conquer this battle? Learning involves hours of study for most technically skilled professionals. Unless you have an incredible attention span and/or photographic memory, studying is a must in order to master a new subject.

## In the Classroom

**Be ready to learn when you begin.** You cannot expect to walk into the room, sit in front of the instructor, and retain the information that is given if you are not ready to learn. Be an active learner.

**Have a positive attitude.** Being positive will help you to endure all situations that you will encounter.

**Learn how to study for different subjects.** Each subject will require different approaches and different mental skills. Once you find the appropriate method keep using that method.

**Listen carefully.** Think about what you are hearing and doing. The more information you collect and understand, the better off you will be. Participate in class; let your instructor know when you have questions or don't understand the information presented.

## Studying

**Study with friends or associates.** Form study groups to get the most out of what is being taught. Studying is more than just taking notes or reading a book. You will understand subjects that your classmates may not and they will likewise have the

same experience. It is often helpful to see a different view from a colleague.

**Have a place where you can study.** Find a quiet place with no distractions. If you enjoy music make sure it will not distract you, but rather help you to relax.

**Take a break.** Do not stress. Go outside, take a walk, or do something that will take your mind of studying. Staying refreshed will allow your mind to retain more information.

**Develop Critical Thinking Skills.** Ask yourself questions such as: Does this make sense? Is this always true or is it sometimes false? Is this an opinion or just based on facts? What are the facts? By learning to compare, question, and contrast you can analyze the information to give a more correct answer and solve more problems.

**Test yourself.** Before you take the actual exam, test yourself. There are many test-prep products out there that will help you significantly. You will be able to reliably test out



## At the Testing Center

**Arrive 10 to 15 minutes early.** You need to have time to relax before the exam. People often make avoidable mistakes when they are rushed.

**Before the exam begins.** The program will give you the option of taking a sample orientation exam to familiarize yourself with the way the exam program operates. You should take this orientation exam before your *first* exam.



**Unsure about how to use the testing computer?** The test administrator can answer any questions that you may have regarding the testing computer or its software so be sure to ask questions. The exams are timed, so you will want to avoid using any valuable test time for questions you could have asked earlier.

**Answer the easy questions first.** The testing software lets you move forward and backward through the exam. Go through all of the questions on the test once, answering those questions you are sure of first; then go back and spend time on the harder questions.

**Eliminate the obvious.** You will find that you will have an easier time if you eliminate the obviously incorrect answers first.

**Answer all questions before quitting.** An unanswered question is scored as incorrect. If you are unsure of an answer, it doesn't hurt to make an educated guess. You will at least have a chance of getting it correct.

**Draw pictures.** You will be given scratch paper for notes during the exam. If there is an exhibit, draw the picture. This will help you engrave the scenario in your mind and keep you from worrying about using the tile feature or toggle between the exhibit.

### Rest and Nutrition

**Get a good night rest.** It is imperative that you get good rest before you go to class. You do not want to be falling asleep

during lecture. If you have a quiz or lab you may want to get up early in the morning to refresh your memory of the things that you studied the night before. It is better to go to bed early and get up in the morning than to stay up all night trying to cram. You cannot cram real learning at the last minute.



**Eat a good meal.** It is real easy to rush in the morning and skip breakfast. However, your body has received no nutrients for eight hours. To physically function properly you need to feed your body with the proper nutrients. Especially if you want to have a clear mind. You will find that you will concentrate more on the important things if you fill your body with the proper nutrition.

### Conclusion

If you are working toward a certification, these tips are for you. Follow them and you will find that your stress level will go down. It is really possible to enjoy the things that you learn in these classes. Remember, the more you learn the better off you will be in the workplace.



# NICs

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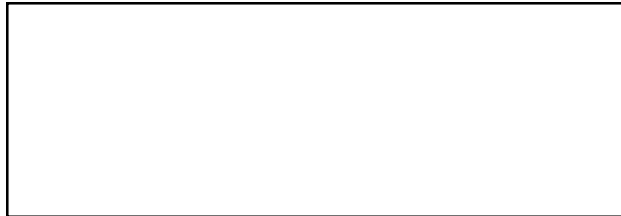
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# Technical Resource CD-ROM – Volume 3 '98

by EdKrach

This issue of the Technical Resource CD is full of pleasant surprises. It sports a new interface and comes with Caldera's Open Linux as a bonus CD. Another timely item is the just released NT Service Pack 4 weighing in at 72 MB. This issue also contains the entire NetWare minimum patch list as well as the Novell Clients for Windows NT and 95. Be sure to check out the Member Only licensed software on this issue.

Here is a the quick glance at some of the contents.

## Licensed Software

### Executive Software

Diskeeper 4.0 for NT Server & WS

### Symantec

Norton AntiVirus 5.00 Win 95/98  
 Norton AntiVirus 5.00 NT WS  
 Norton AntiVirus 5.00 NT Servers  
 Norton AntiVirus 4.03 for NetWare  
 Norton System Center 3.01  
 Norton Network Manager Win 95/NT  
 pcANYWHERE32 v8.01

### NOVaSTOR

Novanet Backup 7.0 for NT & Netware  
 Novanet Web 2.0 100 User version

### Tobit

FaxWare 5.11 2 user version  
*with FREE Technical Support*

### Caldera

Open Linux Lite

### Tetranet Software

LinkBot Express  
 WiseBot Discovery



## Evaluation Software

### Network Associates

Sniffer Basic (NetXray)  
 Sniffer Pro 98  
 VirusScan 3.2.0 Windows NT  
 VirusScan 3.2.0 for Windows 95/98

### MicroHouse

ImageCast 3.0 25 user 45 day trial

### Tetranet Software

Linkbot Pro 3.6b  
 WiseBot Pro

### NOVaSTOR

NovaBack 6.0  
 NovaDisk 6.0

### Seagate Software

Backup Exec 8.0

## Test Prep Software

Prep Technologies Demo  
 Self Test Software Demo  
 Transcender Demo

## Windows NT Service Pack 4

Entire NetWare minimum patch list  
 Novell Clients for NT & 95

