

# NICs Network Information Connection

An essential support resource from the Institute for Network Professionals

## Habit 1 Be Proactive

### *The Habit of Personal Vision*

by Darryl Alder, *Certified 7 Habits Facilitator*

Someone from marketing is on the phone again, rankling you with some need about a new graphic design program installation to meet their important deadline; an alarm sounds on your palm computer reminding you its time for the department budget meeting; and to top it off the network just went down... again ... for the third time today! Suddenly your rage wells up at all the things controlling you and you blow your stack. What else can you do? After all you can't regulate user needs, management meetings or programmer design flaws— besides swearing at the server or cursing Provo and/or Redmond daily really lets the steam off, right?

Many therapists would say yes, encouraging us to let our emotions out, this in spite of the consequences. Face it, we live in a reactive culture that drops bombs on countries that don't behave the way we want; we stream into the courts demanding our fair share of some politically correct pie; and we use hand gestures to communicate our dissatisfaction with the bad driving habits of others, as if it would really make any difference.

But wait ... isn't there something you **could control** in all this? Sure there is; it is the way you choose to react to things you **can't control**. How you choose to respond to life's circumstances depends mostly on which type of person you choose to be, either proactive or reactive. It's your option to either take responsibility for your life or blame someone or something else for it. You can let life happen to you or you can make it happen.

Now stop and think about it: Has the "Blue Screen of Death" ever, really made you **do** anything?

### What the Habit Can Do for You

Since we live in a world of reactivity, it is important to recognize that this habit is not a license for someone to abuse you. Far from it! Neither is it some happy-faced, pollyanna like attitude. But it is a disposition to **do something** and to take charge of your own actions. It can also mean that you will become a transition figure, helping others down a better path than the one they are on now.

These examples will help illustrate both ideas of taking charge of your own situations and helping others as a transition figure:

The MIS Director at a university tells of how she took charge when hackers invaded her grading system. She sought to employ each culprit, who in addition to their regular duties, were assigned to try to break security. Students and staff helped devise ways to plug the holes. Along the way, she somehow created a strong working team. Over time her staff became IS department advocates and together they built a solid, secure network, that has been hacker-free for some time.



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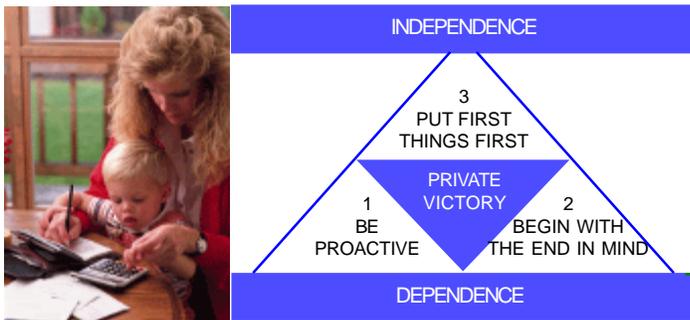
**Member  
Feedback**

In this second example, we see a transition figure at work

One chap tells of a friend's divorce and reentry into the dating arena. A balding head kept this friend from taking dates places that he enjoyed going. He settled on frisbee in the park or a ball game; any place he could keep a ball-cap on his head. This also meant he choose companions who liked those places, but often they were not the women he really liked best. Then he won a \$50 gift certificate to a fine restaurant and determined he would pick the right lady, dress accordingly and relax about his head. He did. They were happy together and still are. So what about the chap telling this story? He says it was the best \$50 he ever spent.

Proactive people take charge of their lives and/or become transition figures in the lives of others. By making this habit part of your life, you will take the first step toward winning a private, personal victory over yourself.

The first three habits, Be Proactive, Begin with End in Mind and First Things First, will all contribute to this victory. As pointed out in the first two articles on fundamental principles (see [www.inpnet.org/NICs](http://www.inpnet.org/NICs) September 15 & 30, 1999) each habit builds on the next. To build on the

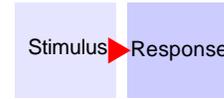


others it is important to understand this first one—it is the habit of personal vision.

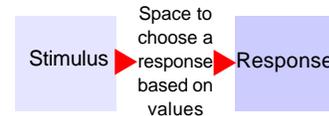
### Understanding Habit #1

Proactive people are a different breed than most. They don't take offense easily. They act in anticipation of future problems, needs or changes. People who develop this personality characteristic tend neither to respond nor to react to a stimulus without some careful thought first. Likewise, they are motivated and act to improve themselves and overcome what others see as predestined life paths.

Whenever anything happens to us there is a moment, a space, where we let the stimulus affect us. Some of us react immediately based on past habits.



But others take a moment, pausing to increase the space between stimulus and response. Being proactive they slow down the process and think about their actions.



They use that space between stimulus and response to make choices that are based on their values or vision. Then they exercise their resourcefulness and make a responsible action.

All humankind is endowed with the freedom to do the same. We all have the power to make decisions. When someone uses their prerogative to choose a response from self-determined values, they are being proactive. Using the margin of freedom to make choices that best reflect our values, even when the only choice is to pick the attitude we will have regarding a bad circumstance, is proactivity.

In *Man's Search for Meaning*, Viktor Frankl a Jewish prisoner held in a concentration camp during World War II, explains this well:

We who lived in concentration camps can remember the men who walked throughout the huts comforting others, giving away their last piece of bread. They may have been few in number, but they offer sufficient proof that everything can be taken away from a man but one thing: the last of the human freedoms to choose one's attitude in any given set of circumstances, to choose one's own way.

Frankl makes the point that despite other's choices and the unpleasant circumstances those choices may bring, we remain free to choose our attitudes, no matter the situation.

Proactive people use personal enterprise, as well as resourcefulness to prevent being hastily roused to action. Like them, you can use any of four, uniquely human endowments

to gain control of your reactions; to stop and think about how you'll respond to situations.

Proactive individuals use these endowments to take responsibility for their development. Whenever moods, feelings and circumstances get in the way of progress, proactive people ask: "What is life asking of me now?" or "What can I learn from this challenge?"

Being proactive requires that we focus on solutions to problems, no matter the cause. For many of us, genetic, psychic and environment factors become an easy excuse to maintain the status quo, or even worse, to regress. Though life's course is influenced by these good and bad external forces, none of these elements control our actions. Instead, when we choose proactivity, we face reality, take responsibility and choose our behavior or attitude.

There is, however, responsibility we must take for past events. Likewise, we have a responsibility for making future things happen. Covey explains:

If we live out of our memory, we're tied to the past and that which is finite. If we live out of our imagination, we're tied to that which is infinite.

The proactive individual believes in infinite possibilities. They have an abundance mentality, a sense there is ample resource, whether external or internal, there is enough for all.

Externally, the sense an existence of enough goods, services and people to support their objectives. And they see intelligence, courage and strength, as the internal resource that allows goal setting and persistence.

The proactive individual is driven by values. Someone else's behavior might be determined

[www.inpnet.org/NICs](http://www.inpnet.org/NICs)

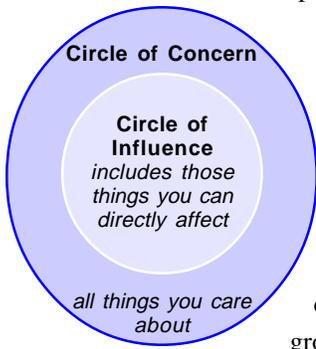
Four Human Endowments		
Endowment	Description	Example
<b>Self-awareness</b>	I can stand apart from myself and examine my thoughts, moods and actions.	I feel irritable today because I didn't get enough sleep last night.  I only said that because I am jealous .
<b>Imagination</b>	I can envision new possibilities and create things beyond my experience	I feel lonesome. I should invite a friend over to dinner.  I feel stuck in this Help Desk job, but I will have more opportunity when I get certified.
<b>Conscience</b>	I can listen to my inner voice of right, wrong and integrity	I should try harder to get along with my work team. They really are important to me.  My client's needs are growing. I will list all their size and cost options even if I can't get the sale..
<b>Willpower</b>	I have the power to choose.  I can act independent of external influences.	If I get laid off it will be hard but it is a great chance for me to get the job I really need.  Even though he is spreading rumors about me, I will not talk behind his back and will be kind.

by their environment, but proactive persons choose their path of action based on their values. Although values are influenced by others, people differ in the degree to which their life depends on these values. Once set, they become the guiding force for proactive individuals. Unfortunately values are not always socially acceptable. For example, criminals may also have values and terrorists might be proactive individuals.

The proactive individual has a vision. He or she creates meaning in life by striving for ambitious goals. Again, these need not necessarily be socially desirable goals. Missionaries, politicians, entrepreneurs, teachers, or athletes may have dreams that conflict with those of others, but they have dreams. They have an imagination of what could be and they set goals in line with their vision.

## Circles of Concern and Influence

We all have concerns we can do little about. It is good to recognize that proactivity is mostly limited to our circle of influence. It's not likely that you can change the weather or personally broker world peace, so before you decide what values you are going to act on, recognize that you have a limited circle of influence. It consists of you first and those you come in contact with on a regular basis. At the same time, forget your uncontrollable concerns, they will just sap your time and energy; they



actually shrink your circle of influence if you spend much effort on them

The best place to begin is with yourself, controlling your own attitudes and actions.

In addition, you use values to choose strategies for influencing other people and things in your immediate life. As you work within your circle of influence, your trustworthiness increases and other's confidence in your character and ability grows. As their confidence increases, your circle of influence also increases, which means, you may eventually take on some of those broader concerns outside your current circle of control.

To illustrate, consider this example: proactive people see love as an action and not so much as emotion. To them love is shown by serving, sacrificing and contributing to someone or something. They see love as something they can do something about. It is within their circle of influence. As they build relationships through loving actions or serve a cause, they feel the emotion of love. At the outset such love was hidden in their circle of concern, but now is within their circle of influence.

### Using the Habit

In families and work groups alike, habits of relating to each other are formed and passed on to others, sometimes for generations. These can be either for good (kindness, respect, helpfulness, empathy, etc.) or for bad (abuse, suspicion, discrimination, vengeance, animosity, etc.). No matter they get passed along.

With bad habits, it is our job to become a sort of transition figure to choose to replace negative behaviors with positive ones. We must end the transmission of the negative to others. We need to replace reactive behaviors, feelings and life-styles with proactive ones.

Becoming a transition figure is by no means limited to habits of human interaction. Consider what Linus Torvalds has done to revolutionize our industry with the introduction of Linux. In 1991, Linus released his first source code for others to work with. Over the course of the next 8 years, this unix-like system gathered the support of thousands of kernel, application and documentation developers, until today,

according to Caldera, there are 12 million users. Surely the odds of developing a popular, new operating system was very unlikely when he started, yet look at this list of Torvalds' accomplishments:

- His vision has driven him to manage an enormous work force and cause.
- He works without direct financial incentive and seeks no wealth..
- He passes this same passion on to others who may earn \$45-\$60k a year and more for their skills, yet they work for Linus for free, generally in addition to their paying jobs.
- He has created an organization that other software development companies have said is impossible.
- He has created a development system, far more important than the operating system.
- Turn around times for new Linux features and bug fixes are incredibly fast.
- Inter-developer communication is incredibly high.

*(Adapted from Glyn Moody in Wired 5.08)*

When else in history has one man lead so many, received so little, and created so much, all for the sake of a product. Of this phenomenon, Thomas Scoville said,

In 1517, Martin Luther ignited the Protestant Reformation with his assertion that no worldly power had the right to interpose itself between the individual and God. Nearly 500 years later, Linus Torvalds is insisting nobody should get between us and our CPUs, either. The Digital Reformation is here.

Indeed, in Linus Torvalds, we have a transition figure, whose proactivity is shaping a new future for our industry.

### Summary

Habit 1—Be Proactive, is the habit of personal vision. This habit suggests that, while we can't control everything in our lives, we can control how we react to everything.

Metaphorically, this habit is like being a programmer for our life; we are not some program being run. Like all beings who have freedom of choice, you are in charge of how you react to the world around you. So take charge, make the changes you know you need to make and become the transition figure your family, community or company needs.



# 'Oops! Sorry!' Doesn't Help When Mistakes Can Cost \$ Millions

by ReedBooker

The owner of a small consulting firm asked his insurance agent for ideas about liability protection for his business. "I don't need much coverage," he said. "It's not likely I'll be causing any damages or injuring anyone." The agent agreed that his exposure to general liabilities was slim. "But how about the financial damage you could cause? How much could your big mistake cost your client?" "Companies hire me because I don't make mistakes," he said. He was put off by just the idea of bumbling a project. Then he thought a minute and said, "You mean they have insurance for that?"

The answer was yes. In fact, professional liability coverage is one of the fastest growing forms of insurance for consultants in all fields. It offers protection against financial losses that result from errors and omissions by the covered people.

If a consultant should be able to perform a given service with reasonable care, then failure can be risky—whether or not the specific action in question was in the contract, or just an undefined expectation. Protection against that kind of failure can mean the difference between life and death for a small to mid-sized consulting firm.

It's important for both consultants and those who contract with them to understand the emerging trend toward protections against liabilities of all kinds. Proof of protection against general liability for physical injuries or damages is now being combined with protection against professional liability for the costs of mistakes.

Some consultants believe that incorporation will shield them from all liabilities. It's true that a corporate shield can be effective against creditors, but it is less of a barrier to charges of

negligence by an officer or employee of the corporation.

And there is the school of thought that as little as possible should be promised to a client in order to protect against possible omissions. Under that approach, many consulting engagements are undertaken on the strength of a proposal letter rather than a formal contract. But, as noted above, just because you didn't promise

specific competence doesn't mean you're not obligated to provide it. The most savvy consultants and clients now agree that the more comprehensive the contract the better.

With damages often sought by an opposing battalion of legal commandos, a consultant or business owner who is being sued for an error or omission has more to worry about than the damage claim itself. Costs of defending a liability suit are high and damage to reputations can be devastating. Even if found "not guilty," a firm's successful defense can bankrupt a small firm. A typical feature of professional liability protection is legal defense against errors and omissions claims – including costs of defense. Insurance company lawyers who are experienced in defending against liability claims go into action immediately when needed, at no cost to the policy holder.

In our ever more litigious society, professionals and small consultant businesses are adding professional liability coverage to their list of basic business necessities.



*MIMS International, Ltd. is an insurance broker that has partnered with The Institute for Network Professionals to provide professional liability to our members. For more information call 1-800-899-1399, or e-mail your requests to [mims@mimsintl.com](mailto:mims@mimsintl.com)*



# 100 Mbps Ethernet Standards *(part 3 in this series)*

by Keith Parsons

This article is the third of a three part series covering wiring and Ethernet standards, and provides a quick overview of 100Mb Ethernet standards.

## Fast Ethernet Overview

In 1995, the IEEE adopted the 802.3u specification for 100Mbps Ethernet. Designated 100 Base T. Fast Ethernet uses the same CSMA/CD access scheme used by 10Mb Ethernet. While 100 Base T gives you up to 10 times the speed of 10 Base T, it also reduces your maximum network diameter by about 10 times – from 2500 meters to only 205 meters over copper. Latency is a highly critical issue in 100 Base T, so the IEEE has designated two classes of 100 Base T repeaters.

Class I repeaters have a maximum latency of .7 microseconds, while Class II repeaters offer a maximum latency of .46 microseconds.

There are also three versions of 100 Base T as outlined below:

### 100 Base TX

- Maximum cable segment length from hub to node of 100 Meters (320 feet)
- 100 Base TX uses 2 pairs of 100 ohm Category 5 unshielded twisted pair cable with RJ-45 connectors and EIA/TIA 586-A color-coding.
- 100 Base TX is wired in a star topology, like 10 Base T.
- One pair is dedicated to Transmit (TX) and one to Receive (RX) – Thus it is full-duplex point-to-point unshared media. When using a Class I repeater, data may not pass through more than one repeater and two 100-meter cable segments. When using Class II repeaters, data may not pass through more than two repeaters, two 100-meter cable segments, and one 5-meter inter-repeater link.

### 100 Base T4

- Maximum cable segment length from hub to node of 100 Meters (320 feet)
- 100 Base T4 uses 4 pairs of 100 ohm Category 5 unshielded twisted pair cable with RJ-45 connectors and EIA/TIA 586-A color-coding.

- 100 Base T4 is wired in a star topology, like 10 Base T.
- 100 Base T4 uses 3 of the pairs for data transmission, and the 4<sup>th</sup> pair is used as a receive channel for collision detection. Full duplex operation is thus not available.
- When using a Class I repeater, data may not pass through more than one repeater and two 100-meter cable segments.
- When using Class II repeaters, data may not pass through more than two repeaters, two 100-meter cable segments, and one 5-meter inter-repeater link.

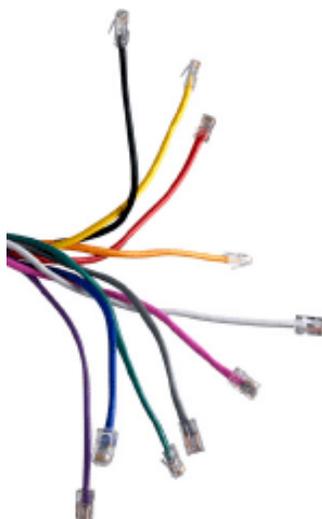
### 100 Base FX

- Maximum fiber segment lengths change based on the type of fiber and duplex capability. With multimode fiber
- Repeater to DTE is 150 Meters half duplex
- DTE to DTE is 412 Meters half duplex
- DTE to DTE is 2 Kilometers full duplex
- With Single mode fiber DTE to DTE can exceed 10 Km full duplex
- The main purpose of 100 Base FX is to extend the distance limitations of 100 Base TX/T4 to encompass full buildings or campus environments.
- Since one strand of fiber is used for Transmit (TX), and one for Receive (RX), full duplex operations like in 100 Base TX are possible.
- 100 Base FX uses 2 strands of 62.5/125 micron multimode fiber – Single mode fiber is also available but distances vary by manufacturer



## Ethernet Switching

The distance limitations imposed by the 100 Base T standard would render Faster Ethernet almost useless if it were not for another technology that has been developed over the past several years, Ethernet Switching. When it comes to Fast Ethernet, switches give you two major benefits. First an Ethernet Switch with both 10 and 100 Mbps ports provide a



method to add 100 Base T segments to your existing 10Mbps networks. Secondly, if you properly plan and install your network using switches, the 100 Base T distance limits will never be a problem. This is because a switch is basically a multiport bridge with a high-speed backplane. It segments your network into smaller LANs, so your network diameter calculations begin at each switch port and do not have to take into account what is connected to any other switch port.

## Network Design Rules

Network hardware, such as cabling, repeaters and NICs, each introduce delay (latency) into the network. In order for the CSMA/CD protocol to work properly, the worst-case round-trip signal delay between any two points on the network cannot be so long that a node could finish transmitting a packet before it received some sort of notification of a collision that occurred during transmission.

Since the smallest packet allowed in Ethernet is 512 bits, then the total delay must be less than the time required to transmit 512 bits between the two most distant nodes on the network – thus 512 bit times. In 10 Mbps Ethernet, this is a fairly long time and can usually be disregarded. At 100 Mbps, this time is only 10% of what it was in 10Mbps Ethernet, and must be considered. If ignored, it can cause a complete breakdown of CSMA/CD, resulting in a slow and unreliable network.

To determine round-trip delay, identify your two most distant nodes and consult the manufacturer specifications or use the chart below. You'll need to look up the maximum delay for the devices themselves, and for each device and cable between them. If the total is less than 512 bit times, and no cable run exceeds the cable specifications, you should have no problems. If the delay is greater than 512, you will need to segment the network with a switch.

Armed with the knowledge from these three articles, you should be ready to take on the structured cabling, and Ethernet protocols within your own networks.

## Sample of 100 Base TX LAN

In this example, the two nodes most distant from each other are PCs #2 and #3. To calculate round trip delay, identify the devices, cables and their minimum delay from the chart, as follows:

Network Device	Rate	Total
2 - 100 Base TX DTEs	2 @ 100/2	100.00
1 - 80 Meters of Cat 5 Cable	80 @ 1.112/m	88.96
2 - Class II Repeater (TX)	2 @ 92	184.00
1 - 5 Meter Cat5 Segment	5 @ 1.112/m	5.56
1 - 100 Meters of Cat5 Cable	100 @ 1.112/m	111.20
	Maximum Delay	489.72

Since the total of 489.72 is less than 512, this is a valid network diameter and should operate without any problems



## Sample Round-Trip Propagation Delay (in bit-times)

Device	Maximum Delay
2 TX/FX DTEs	100
2 T4 DTEs	138
1 t4 AND 1 TX/FX DTE	127
Category 3 or 4 UTP Cable	1.14/Meter
Category 5 UTP Cable	1.112/Meter
Multimode Fiber	1.0/Meter
Class I Repeater	140
Class II Repeater - TX/FX	92
Class II Repeater - T4	67

# NetWare 5 Administration Exam Prep

by RexMoffitt

## Exam Details

Exam Name: **NetWare 5 Administration**

Exam Number: **50-639**

Number of Questions: **69**

Passing Score: **602/1000**

Time to take Exam: **90 minutes**

Standard or Adaptive:

Certifications Exam Counts Toward: **NetWare 5 CNE, CNA**



## Network Definition

- Two or more computers that communicate and share resources.
- Hardware consists of servers, workstations, networks boards (NIC), and communication media. (cable and such)

## Minimum Hardware Requirements for NetWare 5 server

- Pentium processor
- 64MB RAM
- 35MB DOS partition
- 200MB SYS partition
- VGA Video adapter and display
- CD-ROM
- Network Board NIC

## Login Sequence

- Prompts/Validates Username —>Result: Denied or
- Checks Account Restrictions —>Result: Denied or
- Prompted for Password —>Result: Denied and Intruder Detection Notified or
- Access granted.

## Context

- Context describes what part of the tree an object resides in.
  - OU**- Organization container.
  - OU**- Organizational unit container.
  - CN**- Common name of the leaf object.
- The typical context format:  
.CN=Joe.OU=FBI.O=USGovernment  
Gives a mapping to where it is that that user belongs

- There are two types of context available:
  - Current context** - Defines where you are in the tree at the time.
  - Object context** - Defines where an object resides in the tree.

## Types of NDS names:

- **Distinguished name**  
Object's complete NDS path.  
Complete path for Joe:  
.CN=Joe.OU=FBI.O=USGovernment
- **Relative distinguished name**  
Object's NDS path, relative to its current context. Relative distinguished names are not preceded by a dot.  
Joe's current context:  
.OU=FBI.O=USGovernment  
Joe's relative distinguished name: CN=Joe

## Typefull name

Complete NDS path, which contains descriptors to define the object.  
Joe's Typefull name:  
.CN=Joe.OU=FBI.O=USGovernment

## Typeless name

Complete NDS path, which does not contain descriptors to define the object.  
Joe's typeless name:  
.Joe.FBI.USGovernment

## NDS Container Objects

- Root - Top of NDS tree structure. Tree can only have one root, from where all other objects branch out.
- Country - Container which designates the country that this branch of the network resides in. Must be a two-letter abbreviation (i.e. US, UK, etc...)
- Organization - A container that typically represents a company.
- Alias - Logical NDS pointer. Can only point to Country and Organization objects, when used as a Container object can be used as a leaf object as well.
- Organizational Unit - Container that represents divisions of units. (i.e. Accounting, engineering, etc...)

## NDS Leaf Objects

- Alias - Logical NDS pointer. Can only point to Container and Leaf objects, when used as a Leaf object.
- User Template - Template used to create multiple users with predefined rights.
- Organizational Role - Defines a position in organization. Used to assign privileges to anyone in a certain position.
- Profile - Contains login script for a group of unrelated users.
- Directory Map - Represents a logical pointer to a directory in the server file system. Used to centrally manage drive mappings.
- Application - Provides ability to manage applications as NDS objects.

## NDPS Printing

Single utility that manages all printing in the NetWare 5 environment. Downloads all necessary drivers to the workstation. Supports TCP/IP.

- **NDPS Manager:** the Manager controls All agents (object that is the combined printer, print queues and print server). Controls printing on workstations.
- **NDPS Gateway:** Installed on the NetWare 5 server. Acts as agent for non-NDPS aware printers (most today).
- **NDPS Broker:** allows for:
  - SRS (Service Registry Services) for public access printers to be advertised on the network.
  - ENS (Event Notification Services) delivers messages to users regarding job status/events.
  - RMS (Resource Management Services) centrally manages drivers, definition files, banners, and fonts.

### Printer Types include:

- Public: no NDS object (resides in Broker) no security anyone can print to it at any time.
- Controlled Access: NDS object uses corresponding NDPS Gateway. More secure way of printing.

## Commands

- NWADMIN – NetWare Administrator is the GUI used to manage NetWare resources
- FILER - Used to manage files/directories, display volume information, and save and

- purge files.
- FLAG - Changes file/directory attributes.
- NDIR - Used to view files, directories and volumes.
- NCOPY – Copies Directory Structure, and Files (including NetWare attributes)
- RENDIR – Renames directory.
- UIMPORT- Used to import users from a database to NDS. (Delimited ASCII file)Sample syntax:
- UIMPORT LIST.CTL LIST.DAT
- CONSOLE1 - Java based management utility (requires Java Runtime Environment). - Can be used to create User, Group, Organization, and Organizational Unit objects.  
If not available in Application Launcher then, Path = servername\_SYS:PUBLIC\MGMT\CONSOLE1.EXE

MAP Command Options	
MAP	Displays a list of current drive mappings.
MAP X:=SERVER1\SYS:	Maps the X drive to the SYS volume on SERVER1.
MAP N SERVER1\SYS:	Maps the next available drive to the SYS volume on SERVER1.
MAP DEL X:	Deletes the drive mapping to X:
MAP S2:=SYS:SYSTEM	Makes the SYS:SYSTEM directory the second search drive.
MAP C S2:	Maps the second search drive to a network drive.

## NetWare 5 File System

The file system organizes internal disks into one or more volumes.

To rename a physical volume, change its server definition with INSTALL.NLM

To rename a logical volume, use NWADMIN.

NetWare Default Directory Structure	
SYS	Contains OS files, NLMs and NDS programs. By default, access limited to users with Supervisor rights.
PUBLIC	Contains user utilities and commands.
NLS	Contains message and help files for multi-lingual support.
ETC	Sample and miscellaneous files.
DOC	Contains NetWare's documentation files.
DOCVIEW	Contains DynaText viewers to view documentation.



## Security (File & NDS)

- W: Write - Grants rights to open and change contents of files.
- R: Read - Open files.
- M: Modify- Change attributes or renames a file/directory.
- F: File Scan- See files/directories, but unable to open/copy.
- A: Access Control- Change trustee assignments and IRFs.
- C: Create- Create new files and directories.
- E: Erase- Delete files and directories.
- S: Supervisor- Grants all rights to files and directories.

Supervisor rights **cannot** be blocked by an IRF for file system security

Supervisor rights **can** be blocked by an IRF for NDS security.

Rights from NDS do not transfer into the file-system, except for Supervisory rights.

Creator is always given supervisor rights to the File/Directory they create.

Container is always given RF access to SYS:PUBLIC

User is always given RWCEMFA access to their own personal directory.

- In NWADMIN:  
Rights to Files and Directories is used to assign rights from a user's aspect.  
Trustees of this Directory are used to assign rights from a directory's aspect.
- RF (Inherited Rights Filter):  
When the filter is applied, the rights specified are the rights allowed to pass through.  
If Joe has RF rights, and goes through an IRF with only F specified, Joe keeps only F rights.
- Security equivalence:  
When one object's access rights are specified to be equivalent of another object's access rights.
- Ancestral Inheritance:  
By default, any object is security equivalent to its parent container.

## Server Security

Implement the following steps to ensure file server security:

- 1) Restrict physical access to the file server.
- 2) Lock the file server console using SCRSERVER.NLM
- 3) Load SECURE CONSOLE to allow NLMs to only be loaded from the SYS:SYSTEM directory.
- 4) Load REMOTE.NLM to allow only remote access to the server.

## Login Scripts

Execution order for login scripts (also order of use):

- 1) Container - Script for Organization or Organizational Unit containers used for all users in the container.
- 2) Profile - Script, which contains specific parameters for a group of, unrelated users.
- 3) User - User specific script.
- 4) Default - Executed for any user without individual user login script.  
To avoid having the default run you need to specify in a container or profile NO\_DEFAULT

Users can only be assigned to one profile group.

Sample Syntax: WRITE "Good %Greeting\_Time,%Login\_Name"

Remarks are used to insert a line of text that will be ignored by NetWare.

REMARK, REM, ; , or \* can be inserted before the line of text to define it as a remarked line.

Sample Syntax: REM MAPF:=SYS:PUBLIC

DOS executables, commands unrecognized by a login script, need to be preceded by # to specify that the script will need to run an external command.

#CAPTUREP=HPLJColor5

The @ command can also be used to specify a DOS command that needs to be run.

## ZENWORKS 1.0

- Distributes applications to users through a single point of administration.
- Provides: Location Independence (by use of URLs), Application Fault Tolerance (by use secondary copies of the application),

- Application Load Balancing (by use of multiple servers), and Roaming Profile Support: (by use of workstation OS detection)
- Application Launcher (NAL.EXE): A component that is pushed to the workstation. Determines the proper application launch settings, regardless of client operating system.
- SnAppShot: Creates an image of current applications/settings and allows distribution.
- AOT: Binary file where snapshot info is stored. Accessed by NWADMIN in application object.
- Pull distribution: Places application icon (mapped to resources) on the user's desktop.
- Push distribution: The Focused Run feature allows for the user to receive the software locally at a specified interval such as at login.
- Alternative Utilities are: Application Explorer (Win95/NT only), NALEXPLD.EXE, and AXT (text version of AOT)
- Policy Package Object: Controls specific to Workstations and Users such as, desktop environment, remote control of workstations, and information through Help Requestor.
- User Policies: associated with the following objects: Containers, User Groups, and User.
- Workstation Policies: only associated with Containers, Workstation Groups, and Workstations. (Users must register workstations with NDS before they can be treated as objects.)
- Only one WIN 95 user package can be associated with the Admin.
- Policy rights are applied in the order of object then container.

### Client 32

- Supports both TCP/IP (Required for Internet) and IPX (Required for older Novell Networks) Protocols.
- Requires ODI (Legacy Dos/Win 3.x), or NDIS (Win95, NT) capability. (This binds multiple protocols to a single card)

## FYI: NDPS for Printing on the Network

Previous to NDPS "Novell Distributed Print Services," the print queue, print server, and printer were all separate objects in NDS. Novell's NDPS opens the way to focus all the management tasks on the printer. This is a much nicer way, rather than dealing with the headaches of creating print queues, print servers, and printers, then trying to hook them all together. The combined entity is called a printer agent. Print jobs now go directly to the printer rather than to a print queue. Then this returns better network performance, saves administrative time, and lessens the chance of printing problems. Another nicety is that the drivers for the printers do not have to be resident on the requesting client computer.

This would be a good place to identify the components of NDPS and what they do. The four major components are

1. Printer agent
2. NDPS Manager
3. Gateway
4. NDPS Broker

A printer agent can either be software running on a server representing the attached printer, or built into an NDPS aware printer, meaning the printer agent is built into the printer hardware (usually newer models). Services provided by the printer agent include event notification, such as problems, job completion, or status changes. It allows you to print in the different network environments such as LAN, WAN, or in the enterprise. It will also perform management functions for the printer such as processing print jobs.

The NDPS Manager is used to manage the printer agents. You might think of it as something that keeps them in an orderly, understandable, and functional order. It must be created before creating the server-based printer agents. You can only have one NDPS manager per server. That manager can handle an unlimited number of the printer agents.

Netware 5 comes with three gateways, Hewlett Packard Gateway, Xerox Gateway, and Novell Gateway. Gateways are used when you have printers that are not NDPS aware. This allows for printer management, sending print jobs to non-NDPS aware printers, and to query the printer for a status check. The gateway translates the queries going through NDPS into the specific language that the actual print device understands. The printer can then understand the commands and complete its request.

The final component is the NDPS Broker. The Broker is installed at the time NDPS is loaded. The Broker provides three important services:

1. It provides a way for printers to advertise on the network, so users can locate them.
2. It provides a way for the printers to notify users of printer events and status of print jobs.
3. It also allows for the centralized installation and accessing of resources. Those resources can be added to or replaced as needed. Once the resources have been centralized, they are available for printers, clients, and other network resources.



# Are You Ready for the Y2K Bug?

## A handy Website reference for Midnight Dec. 31<sup>st</sup>

Name	URL	Description
2K Times	<a href="http://www.2Ktimes.com/y2k.htm">http://www.2Ktimes.com/y2k.htm</a>	Online Y2K newspaper
Blue Ocean Software	<a href="http://www.blueocean.com">http://www.blueocean.com</a>	Makers of "Trakt!", an inventory and help desk package
California 2000	<a href="http://year2000.ca.gov">http://year2000.ca.gov</a>	Extensive information and standards
California State Compliance Survey	<a href="http://www.year2000.ca.gov/Relevant/VendorCompliance">http://www.year2000.ca.gov/Relevant/VendorCompliance</a>	Responses to vendor surveys
ComLinks	<a href="http://www.comlinks.com">http://www.comlinks.com</a>	Legal and political aspects of the Y2K problem
Computer Information Center	<a href="http://www.compinfo.co.uk/y2k/manufpos.htm">http://www.compinfo.co.uk/y2k/manufpos.htm</a>	Manufacturer statements and general information for the U.K.
DISA Y2K COTS Product Database	<a href="http://www.mitre.org/research.cots/COMPLIANCE_-CAT.html">http://www.mitre.org/research.cots/COMPLIANCE_-CAT.html</a>	Large database listing compliance results for a variety of products
Federal Y2K COTS Product Database	<a href="http://y2kpolicyworks.gov">http://y2kpolicyworks.gov</a>	Large database listing compliance results for a variety of products
General Services Administration	<a href="http://www.itpolicy.gsa.gov/mks/yr2000/y2khome.htm">http://www.itpolicy.gsa.gov/mks/yr2000/y2khome.htm</a>	Best practices, general information, sample policies, and more
GTE Evolutions	<a href="http://www.gte.com/evolutions/current/overview.html">http://www.gte.com/evolutions/current/overview.html</a>	General information
IBM Non-IBM Product Readiness	<a href="http://www2.software.ibm.com/solutions/ISV/Year20-00.nsf">http://www2.software.ibm.com/solutions/ISV/Year20-00.nsf</a>	Third-party software
IT 2000	<a href="http://it2000.com">http://it2000.com</a>	Y2K tool vendors
IT-Map International	<a href="http://2000.it-map.com">http://2000.it-map.com</a>	Makers of IT-Map2000, an inventory program for Y2K
JBA World Y2K Information	<a href="http://2000.jbaworld.com">http://2000.jbaworld.com</a>	Tutorial on Y2K issues
Microsoft Year 2000 Resource Center for IT Professionals	<a href="http://www.microsoft.com/technet/year2k/">http://www.microsoft.com/technet/year2k/</a>	Information and Microsoft software updates
Millennium Bug - Prime Minister Tony Blair's Y2K Initiative	<a href="http://www.open.gov.uk.bug2000">http://www.open.gov.uk.bug2000</a>	Compliance database for the U.K.
Millennium Fix	<a href="http://homepages.enterprise.net/pjwalker/y2k.html">http://homepages.enterprise.net/pjwalker/y2k.html</a>	A free program that may work around some PC BIOS problems
Minnesota State Y2K Information	<a href="http://www.state.mn.us/ebranch/admin/ipo/2000/200-0.html">http://www.state.mn.us/ebranch/admin/ipo/2000/200-0.html</a>	Best practices and extensive information
Mitre Corporation Links	<a href="http://www.mitre.org/technology/y2k/docs/Y2K_LINK-S.html">http://www.mitre.org/technology/y2k/docs/Y2K_LINK-S.html</a>	Excellent source of links to other Y2K resources on the Internet
Money Magazine	<a href="http://www.pathfinder.com/money/y2k/index.html">http://www.pathfinder.com/money/y2k/index.html</a>	Testing tools and other information
Mother of all Y2K Links	<a href="http://pw2.netcom.com/~helliott/00.htm">http://pw2.netcom.com/~helliott/00.htm</a>	Links to information including vendor statements and best practices
Network Associates	<a href="http://www.nai.com/products/helpdesk/helpdesk.asp">http://www.nai.com/products/helpdesk/helpdesk.asp</a>	Makers of McAfee Total Help Desk, an inventory and help desk program
Shewmake Software	<a href="http://www.year2000software.com">http://www.year2000software.com</a>	Makers of Millennium Manager 2000, inventory software
Small Business Administration	<a href="http://www.sba.gov/y2k">http://www.sba.gov/y2k</a>	Y2K help for small businesses
SOS 2000	<a href="http://strategis.ic.gc.ca/sc_mangb/y2k/burst.html">http://strategis.ic.gc.ca/sc_mangb/y2k/burst.html</a>	Canadian site for information
Texas A&M Compliance Database	<a href="http://www.tamu.edu/cis/teams/yr2k/yr2search.cgi">http://www.tamu.edu/cis/teams/yr2k/yr2search.cgi</a>	Database listing the compliance of numerous products
Tick Tick Tick	<a href="http://www.tickticktick.com">http://www.tickticktick.com</a>	Online newsletter
Washington State Y2K Program	<a href="http://www.wa.gov/dis/2000/y2000.htm">http://www.wa.gov/dis/2000/y2000.htm</a>	Information and survey responses from manufacturers
Y2K Reporter	<a href="http://www.yardeni.com/y2kreporter.html">http://www.yardeni.com/y2kreporter.html</a>	Latest Y2K news
Y2K.com	<a href="http://y2k.com">http://y2k.com</a>	Legal and management information
Y2K Information Center	<a href="http://www.year2000.com">http://www.year2000.com</a>	Excellent general information and links to other sources

# Connecting NT to NetWare Resources

by **SteveCrowley**

In the case that you have an existing NT network and are going to be utilizing Novell NetWare servers, several questions and concerns arise when trying to connect Microsoft clients to the NetWare resources. The first questions are what protocols or special software must be installed. Also on either side of the equation, how to get these dissimilar products to talk? I know that this seems like a daunting task to some people. In actuality, if one does a little research, it's not all that hard. In this discussion let's address the solution using the Microsoft redirectors.

The first thing is to decide what type of Microsoft client is going to be used. Will it be an NT workstation or server, a Win 95/98 machine, or will it be one of these going through an NT server trying to get onto NetWare. If it is a Win95/98 client, you must use the IPX protocol and install the Microsoft Client for NetWare. This will enable a Win 95/98 client to have full access to the NetWare file and print applications. If you are going to be using an NT workstation you must use a different redirector. You must still use the IPX/NWLink protocol but must install Client Services for NetWare (CSNW). The NWLink protocol is installed automatically when CSNW is installed. Once NWLink and CSNW are installed and configured, you can connect to NetWare resources with Windows NT Explorer or from the command line. Users can browse their way to resources and administrators can use the command line to attach resources in logon scripts and batch files.

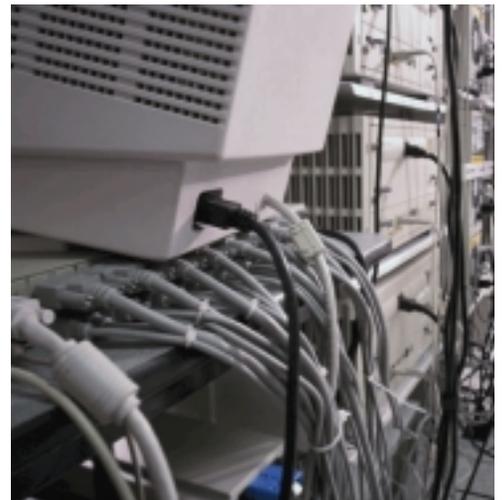
In the situation where these clients will not have either the IPX/NWLink protocol, or their particular client for NetWare service installed, they would have to go through an NT server that has Gateway Services for NetWare (GSNW) running on it. This means that the Win95/98 client would contact the NT server and let it know that it is trying to reach a resource on the NetWare network. The NT server would then use its Gateway to translate

for the client to the NetWare server and gain access to what it needs. This is not the best solution if performance is any sort of an issue. Using the Gateway Service for NetWare causes quite a performance hit and is a less desirable option for sites that require high-speed access to their NetWare resources. Before installing GSNW, it's necessary to remove any other NetWare client software that might be on the NT Server. Novell develops and distributes its own NetWare client software for NT and if any version of this is installed, NT will inform you that it must be removed.

Now let's address what's needed on the Novell side. A group named NTGATEWAY must exist on the NetWare server to which you are accessing. A user account that you want to use as the gateway account must be a member of this group. It is recommended that this account have supervisor privileges. By doing so, this enables the gateway account to

access all files and directories on the NetWare file server. Security for these files and directories will be administered using the Windows network share permissions facility on the Windows NT file server. Since the Gateway Service connects to the NetWare server with just one user account, the gateway account, permissions for gateway users cannot be controlled on the NetWare server.

There are of course concerns that arise when trying to get Novell and Microsoft products to harmonize. But, by doing a little planning, as is always required when setting up a network, you can integrate the strengths of these competing vendors.



# Searching the Web

<http://home.sprintmail.com/~debflanagan/main.html>

by DeniBurger

Have you ever been asked to find information on the internet? Search engines have been designed to help make our lives easier, but how do you know which ones to use? Well, Debbie Flanagan, Education Specialist in Ft. Lauderdale Florida, did the research for us and designed a tutorial to make searching the web a breeze.

In the past few months I have been asked to look up several different topics online. I would typically go to [www.yahoo.com](http://www.yahoo.com) and type in the word or words I was looking for, each time bringing thousands of sites for me to view. I searched endlessly through the sites only to find that the information there was not for me.

Then one day I was perusing my e-mails and I found a gold mine – a gold mine several months old. I'm embarrassed to admit it; I hadn't read my e-mail. You can all relate right? Well, maybe not, but I found something in my e-mail that could have helped me in those months of online searching, a new tutorial to help with web searches. I have taken the tutorial and reviewed it for you. For now, sit back and let me tell you about it.



## In the Tutorial

According to the tutorial there are two types of tools used to search the web – search engines and subject directories. Subject directories rely on humans to “organize and catalog” information and search engines rely merely on computer programs to log their information.

Debbie states that to successfully search the web you must follow two steps. “First, you must have a clear understanding of how to prepare your search.” In other words, you need to know what you are doing. You can't

pretend on this one - if you don't have a clear understanding of what you are looking for, you won't find what you need. “Second, you need to know how to use the various search tools available on the Internet.” Search engines such as Alta Vista and subject directories such as Yahoo are just a couple of options that you have.

In the tutorial you will find that subject directories are compared to trees. If your topic is included on the home page of the subject directory, topics and subtopics will begin to branch out until your search is narrow enough to find what you are looking for. If your topic is not included, there are many keyword searches that can be performed. You will learn in the tutorial that if you cannot find something specific, use a search engine.

If you're anything like me, you hate spiders. However, ‘computer spiders’ are a great tool. They crawl around and pick up keywords and log them into a database that search engines use. Because of the largeness of the database, you might have thousands of search results that come back to you. This is where the tutorial is most helpful.

## Make a List

First of all, we're going to go back to some of the basics of simple writing. You need to know what your purpose is when searching. Know what you're looking for and make a list of important concepts or topics. Go through your list and pick out keywords. If you have phrases that have similar words, be sure to make a list of them. The idea here is to narrow your search and expand your possibilities.

## Using Boolean

Once you have your list you can begin your search by using Boolean words or phrases. By using the Boolean ‘and’ search engines return all web pages with only the words you have requested. For example, if your list was made up of keywords such as mountain bike and maps, your results will be only those web sites

that contain both words. The Boolean 'or' will return sites with any and all words listed. Other Boolean characters include 'and not', and 'Plus & Minus.' To learn how to use these words or phrases you too need to experience the tutorial. You will find that once you take the time to sit down and search exactly how you're instructed, you will learn how to minimize your time online.

## Typing your words and phrases

The way you type your words and phrases is going to affect the way each search engine will search. "Most search engines interpret lower case letters as either upper or lower case." As a result, those of you who always have your caps lock on will want to turn it off for a broader search. If you would like to narrow your search; however, caps lock will be to your benefit.



## There's much more to searching the web!!

There is so much more information in the tutorial I found beneficial; however, rather than ramble, you might like to go there yourself. Her site is:

<http://home.sprintmail.com/~debflanagan/main.html>

The beauty of this site is the tutorial is free. Try it out; you will like it.

## Researching Companies

In my most recent articles I have discussed appropriate dress in the workplace and how to write a résumé. Both aspects of your career are important but if you don't have a job or even a prospective company to work for then your résumé and attire are not going to matter. Debbie has also created a tutorial that will help you in searching for companies and their backgrounds, reputation, etc.

## Back to the Tutorial

The Company Search tutorial teaches you must first know the company's 'ticker' symbol to find information about them. For instance if you were looking at Dell Computer, you would follow the links listed in the tutorial that help find ticker symbols (if you don't already know it). If there is not a ticker symbol listed for the company you are interested, it is possible that you will still find information if you look up the company name.

Once you find the ticker symbol or company information there is unlimited information on the web. There are sites that help find telephone numbers and addresses, home pages, sales prospects, financial information and much more. Where do you find this information, you ask? Well, it too is found in the tutorial. There is such a wealth of information that I never new existed. The best part about it all is this information has been compiled and is listed on this site:

<http://home.sprintmail.com/~debflanagan/index.html>

## Try it, You'll Like it

I'm convinced that if you try the tutorial you will like it. What more can you ask for than for a free tutorial that helps make your life easier? I learned a lot by going through each step Debbie has created and I'm sure you can too. Happy Searching.

[www.inpnet.org/NICs](http://www.inpnet.org/NICs)

# NICs

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## Member Feedback



### Technical Resource CDs & NICs

Yes, keep up the good work! The Q3 CD was well worth the wait. Lots of timely information. I think that this one is the best yet!

*Jeff Glassman  
GTE California, Long Beach, CA*

I joined for the CD but have discovered several other useful benefits. The CD is great. I sometimes use the updates and documentation, and obviously I appreciate software included. The NICs journal has useful and interesting articles. The technical articles and those about leadership have been especially interesting to me. I went to the web site and got several back issues of the NICs; still need to read those. ...Instead of directly reviewing hardware, might it be possible to collect links to available resources about hardware and software reviews? I'd certainly appreciate knowing where to turn when I need to evaluate equipment options. (*Thanks for the suggestion. We will look into it.*)

*Matt MacIntire  
Intersoft Corporation, Silver Springs, MD*

I greatly enjoy all of the services provided by membership with the Institute. I consistently use the NICs e-journal and the Technical Resource CD's.

*Cindy Lee Stap,  
Engineer Tech/Sr Analyst, Dell Computers TX*

Currently I am doing network security work for a firm in Herndon, VA. The CD's white papers are a tremendous source of information. I enjoy the newsletters as well. ...The trial software helps me make purchasing decisions based on actual software on the hardware I use. All in all, between the CD and e-journals, this is the best deal on the Internet today. Looking forward to the next CD and e-journal.

*Dennis Furr  
Senior Analyst, EWA Herndon VA*

We've used our member discount to buy a few things; Cybex switches, etc. and I read the newsletter and occasionally circulate excerpts internally. The CDs have not been as useful as I'd hoped, but we continue to peruse them. (*The Q4 99 is themed around Network Analysis. We hope you find it more useful.*)

*Jacque Rowden, Systems Manager,  
Buchanan Ingersoll Professional, Pittsburg PA*

### Comments from Abroad First from Asia,

Your service and information is really helpful. I am very satisfied you are producing the CD version of your Web site, because the Internet connection here in Uzbekistan is bad and I like getting everything on CDs. ... All information about networks (DOCs for design, troubleshooting, technical tips, whitepapers) is excellent. It would be good if you could offer some special software for networking like network's analyzers and network's monitors (*look for it Q4 99 in December*). The latest updates for Microsoft and Novell are wonderful! The exam's part of NICs is helpful! I passed 2 Microsoft exams with the help of NICs and exam preparations. Please, keep placing exam's preparations on CDs and NICs! You are doing a great job! Thank you very much!

*Alexander Pryakhin  
The British Council, Uzbekistan*

### from the British Isles,

I find the quarterly CD's a real help; patches and drivers are most used. The "free" software again has had some excellent programs that I use almost daily. And the PDF files are a great source of info and guidance. In fact I find the whole service offered just fantastic. I really do find it a good source of information.

*Andrew Hewitt  
IT Manager, BT Broadcast Services  
Telecom Towe, London, UK*

### and finally from Canada

I use and look forward to the technical CD's. Although some of the information can be obtained from other sources, having this type of information on one CD has come in handy more than once....

As for the member special's - I initially joined because of the Brainshare special. I am glad I did, and do appreciate any special's acquired because of being a member. As I am sure you were aware, the shirts that were handed out at Brainshare this year were a big hit. Very nice touch. I plan on going to Brainshare next year and hope to see the group discount on the registration fee. (*For the Brainshare 2000 discount, please contact us at the number or URL listed at the top of this page*)

*Jillian Tilley  
JGT Consulting, Edmonton AB Canada*