NICs NETWORK INFORMATION CONNECTION

AN ESSENTIAL SUPPORT RESOURCE FROM THE INSTITUTE FOR NETWORK PROFESSIONALS

Developing and Directing Team Output

by **Darryl**Alder

Thousands of organizations are engaged in using some level of self-managed teams. Each develops and directs their teams at multiple levels, including: management along with engineering and technical teams, service and support groups, as well as front line operation teams. Since these teams exist to advance the business, their activities, are expected to improve quality, get greater productivity, decrease cycle time, reduced costs, design better products, satisfy more customers and so on.

This leadership skill examines two groups of activities that help you get the results you want. In Part I we explore the stages of group development, so that you can recognize and understand eachof them. The objective is to move your team through each stage effectively.

What the Skill Can Do

Consider the years between 1930 and 1945 in Great Britain. During this period, Winston Churchill established himself as one of the great 20th Century leaders. Using elements of this skill, Churchill observed British morale "norming" at a level beneath their national potential. He also observed his party, under the leadership of Neville Chamberlain, yielding to Hitler's territorial demands. He reacted to Hitler's aggressive intentions by warning both politicians and the British people again and again.

When Hitler invaded Poland, in 1939, Britons realized Chamberlain's policy of appeasement had been wrong and Churchill was right. Chamberlain was forced from the office of Prime Minister, and in May 1940, Winston Churchill was appointed to the position in an all-party government. Churchill faced the formidable task of both unifying Parliament and leading his nation.

On May 13, 1940 Churchill gave his first speech to the House of Commons, a speech which displays the oratorical skills which were so effective in keeping up public morale. He said, "I have nothing to offer but blood, toil, tears, and sweat. We have before us an ordeal of the most grievous kind. We have before us many, many months of struggle and suffering.

"You ask, what is our policy? I say it is to wage war by land, sea, and air. War with all our might and with all the strength God has given us, and to wage war against a monstrous tyranny never surpassed in the dark and lamentable catalogue of human crime. That is our policy.

"You ask, what is our aim? I can answer in one word. It is victory. Victory at all costs — Victory in spite of all terrors — Victory, however long and hard the road may be, for without victory there is no survival.

"Let that be realized. … 'Come then, let us go forward together with our united strength.'"

With that start, Churchill began inspiring his people to take courage, hope and endurance. He managed his nation's morale through inspiring speeches and helpful radio broadcasts. He moved them through the stages of group development with fearless inspections of bomb-damaged streets and defiant reactions to each incursion by the enemy. He became the living symbol of Britain's determination to win the war.

Like Churchill, if you have a leadership role or are aspiring to one, then developing your team and directing their output is a must. It may seem daunting at first, but with time the rewards can be great.
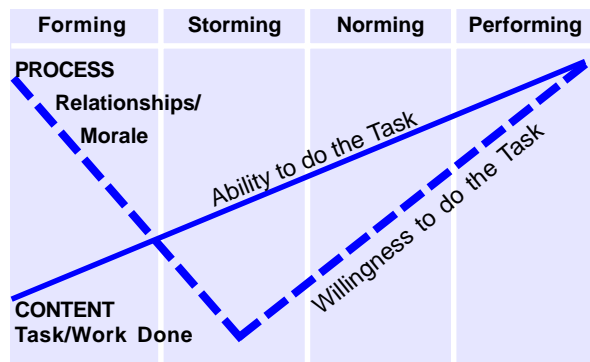
Understanding the Skill (Part I)

As stated earlier, there are two parts to this skill, namely: developing and directing teams. Part I of this article presents concepts related to group development. Most management training focuses on one-on-one interactions, missing the dynamics and synergies of groups. While groups are unique, complex, ever-changing systems, they are not the sum of their individual members. They are a new entity, full of interesting surprises and challenges.

Even though all groups are different, they seem go through similar stages as they grow from a variety of individuals to a smoothly functioning team. These common areas give a leader a chance to diagnose and predict impending group dynamics and help the leader to facilitate group growth and productivity.

A leader's primary task is not just to communicate goals, but to *observe* these stages with all their variables in the group's activities. This becomes easier for leaders when they contrast **content** (task—"what" the group is doing and talking about) with the **process** (relationships—"how" the group is handling communication and interpersonal activities). This can be done by asking first, can they do the job (content or task)? Second, ask will they do the job (process or relationships)? When you ask these questions, groups generally fall into one of four progressive stages.

Stages of Group Development

Stage 1: Forming - relationships are high, but getting things done is at its lowest compared to other stages.

Can they do the job? No, but they would if they knew how. Members of groups in this stage are seeking direction and a clarification of goals. They usually have positive expectations and moderate eagerness for the job to be done. However, anxiety about who they are, what they are like, why they are there, where they fit, and what the group's goals mean, get in the way of getting much done. The lengths of time for this stage depends on how clearly tasks are given and how easy they are to complete. For best results in this stage use a directive leadership style. Tell team members what to do and who should do it.

Stage 2: Storming - relationships bottom out while effectiveness remains marginal.

*Can they do the job? No, but they would start if they knew what was expected and if they could figure out how to work together. The problem is they don't know who cares and why **they** should care.* At this stage the reality of team tasks affects initial hopes and expectations, causing morale to dip. Team members are still dependent on the leader but are becoming

dissatisfied with that dependency. They may react negatively toward the leader and other group members. They can be frustrated and confused concerning their goals and tasks. The leader can shorten this stage by redefining goals and breaking them into smaller, do-able tasks. Best results come from using a coaching leadership style; stay off the "playing floor," but be present to "shout suggestions from the sidelines." Just like good ball players need their coach's bigger view of the playing field, your team will need your observation, instruction, help, check-ups and reactions. Be there, be firm but fair, and don't hold back your reactions to their work, either good or bad.

Stage 3: Norming - relationships are improving and effectiveness increases some.

Can they do the job? Yes, they are finally starting to, but they are still trying to understand your expectations of them and still figuring out who does what best. They are also finding purpose in their tasks and care about the outcomes. However, if left alone they will settle for less than the best they can be. At this stage the group finds "its" norm. The group is more positive toward each other which helps them to meet their objectives. By now they have discovered how to work together which increases the pleasure of associating as a team. There is less animosity, differences are resolved, they have mutual respect, trust and unity. This stage can be short-lived, but it could also be the end of group growth unless you help them with any unresolved feelings or dissatisfactions. Group members must bond together or they won't move to the next stage. You can help this along best by using a supporting leadership style and by listening to their concerns. You may also need to reinforce your standards to get desired results.

Stage 4: Performing - relationships are high and task effectiveness is high.

Can they do the job? Yes. Will they do the job? Yes, and with pride. At this optimum stage, the group works very well together, they understand, challenge, support, and recognize each other. They are confident about outcomes and communicate open and freely, not afraid of rejection. They begin creating their "own" task filling in each other's gaps by using the group's strengths. Usually they share leader-

ship among themselves and don't worry about having a "leader." Their focus will be on task accomplishment and their knowledge, skill and motivation will all improve. This stage lasts until the group's task is completed or until new members are introduced to the group. If the group is kept in tack for other tasks, as soon as these new tasks are understood, old synergies are released and the group moves through the development stages more quickly. In this stage delegation is the best leadership style to use. Stay out of their way and let them grow without much interference.

Putting the Skill to Work

Effective leaders understand their primary function of helping teams move through these stages and managing a balance between task focus and group morale. According to Carew and Blanchard, in *Group Development and Situational Leadership, p. 4*

"…managers who emphasize either task accomplishment or morale at the seeming expense of the other for long periods of time tend to not be as effective. It is widely accepted that both task and maintenance functions are critical and that they interact to promote group drive and cohesiveness which are essential elements in promoting productivity.

"*Task functions* are those behaviors which focus on getting the job done and pay attention to *what* the group is supposed to be doing. They include things such as setting the agenda, establishing or clarifying goals, giving directions, initiating topics, setting limits, pushing for decisions, giving and seeking information, sequencing and summarizing. In general they are *directive* or *educating* functions focused on the task.

"*Maintenance functions* are directed toward the group's process and are focused on developing the group's harmony and cohesiveness and pay attention to *how* the group is functioning. They include giving encouragement and recognition, harmonizing or mediating conflict, sharing or encouraging participation, building relationships and analyzing the group's growth. In general, they are *supportive* functions focused on group development."

In Part II of this article, we will ccontinue with five good management practices: observing, instructing, helping, inspecting and reacting.

All About CPUs (Part II)

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

(This article is a continuation of an article in January 31,1999 NICs pp.4–5)
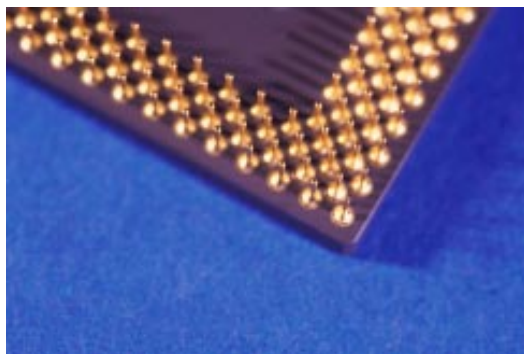
Each Intel CPU has eventually been "cloned". The "clones" are not exact copies, and aren't necessarily 100% compatible. In fact, the word "clone" isn't even accurate, as explained below. But the non-Intel CPUs are an alternate choice, frequently are more powerful, and almost always are cheaper.

Compatibility

The chance of less than 100% compatibility exists because the CPUs can't be physically identical; Intel has their versions patented. This does not mean the Intel CPUs are actually superior, but they are the most common, so they are the standard, and virtually all commercial software is compatible with Intel CPUs. Most software is also compatible with other brands, but not all; occasionally there will be a program that will fail on a non-Intel machine. This is probably because the software was written on an Intel-based machine and never tested on any other brand of CPU.

Given that Intel CPUs are much more common, it is logical to assume that any program is far less likely to be incompatible with an Intel CPU than with any other brand. However, I used an AMD for several years, and only had one program prove incompatible. I really doubt compatibility is an issue any longer.

Relative power

Often you will see a clone CPU advertised as being more powerful than the Intel equivalent.

Usually this is true. Why? It's the way they are rated. AMD, for example, uses the Winstone 96 benchmarks to measure the performance of a new processor and rates it by the equivalent performance of an Intel CPU. As an example, if the AMD CPU gives equivalent performance to a Pentium 200, it would be rated a "PR200." Cyrix uses a similar rating method, and uses the "PR" ratings as well. For example, the Cyrix 6x86MX-PR233GP has a performance rating PR233, meaning it's equivalent to an Intel Pentium 233. The Intel CPU has a clock speed of 233Mhz, but the Cyrix only has a clock speed of 188Mhz.

Here's the point: Intel CPUs are rated by their clock speed. The AMD and Cyrix (and probably others) are rated by their performance, then labeled by comparison with the Intel standard. This is not a bad thing, because it does give you a reasonable comparison. After all, you don't really care what your CPU's clock speed is; you care what kind of performance you get.

So how can a 188Mhz CPU perform the same as a 233Mhz? Basically, clock speed is not the only factor. A CPU that can perform processing steps in a different sequence from their order in the program will out-perform a strictly sequential CPU. The first CPU can issue a call for data from the disk, then do a lot of processing while it waits for the I/O to complete. Then when the data arrives, the CPU picks up where it left off. There are other techniques which allow a CPU to predict which possible code branches will be used, and call for disk data before the program actually requires it. Internal bus speeds can be different. Dual busses (one for input, one for output) can be used. There are many possibilities.

Cost

Right or wrong, cost is very often given more weight than any other factor. Intel CPUs cost more than other brands. Why? Probably because people will pay the higher prices. There are a lot of people who won't even consider a non-Intel CPU.

As I mentioned in part 1 of this article, Intel is apparently keeping their Slot 1 mount proprietary. To upgrade to a Pentium II, you have to

upgrade your motherboard. But if the other CPU manufacturers come out with a Pentium II equivalent that still uses the Socket 7 mount (as a number of CPUs do, including the regular Pentium), you will be able to get Pentium II performance in your existing computers, and the non-Intel companies will have a very strong edge over Intel. If other CPU manufacturers are not able to develop a Pentium II equivalent that uses Socket 7, they will have to come up with their own mount, and we will see a divergence in computers.

Personally, I think Intel is making a serious mistake in not licensing their new bus protocols to other CPU manufacturers. It feels a lot like IBM's PS/2 strategy, in that it means no other CPU manufacturer can use Slot 1, but also, no one else can contribute to it. PC users have shown time and again that they want open solutions, so they can pick and choose from a wide selection of hardware and software.

The most important points to consider, then, are:

- Cost (CPU price, plus whatever other hardware must be upgraded)
- Future upgrade (will you be able to upgrade again?)
- Performance (speed)
- Compatibility (will your applications run on it?)

You might want to wait to see what the non-Intel companies do about the Slot 1 situation, especially if you have hundreds of PCs.But remember how quickly things change in the computer world; there is always something better just about to be released.

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

Keyboard Shortcuts for Windows 98

Common Shortcuts for a selected object. *(As listed in the Windows 98 Resource Kit)*

Shortcut	Action
CTRL+C	Copy
CTRL+O	Open
CTRL+P	Print
CTRL+S	Save
CTRL+V	Paste
CTRL+X	Cut
CTRL+Z	Undo
F1	Display contextual Help window.
SHIFT+F1	Activate context-sensitive Help mode (What's this?)
SHIFT+F10	Display pop-up menu
SPACEBAR	Select (same as 1 click of mouse button)
ESC	Cancel
ALT	Activate or inactivate menu bar mode
ALT+TAB	Display next primary window
ALT+ESC	Display next window
ALT+SPACEBAR	Display pop-up menu for window
ALT+HYPHEN	Display pop-up menu for active child window (MDI)
ALT+ENTER	Display properties
ALT+F4	Close active window
ALT+F6	Switch to next window within an application
ALT+PRINT SCREEN	Capture focus window to Clipboard
PRINT SCREEN	Capture desktop image to Clipboard
CTRL+ESC	Access **Start** button in taskbar
F2	Rename
F3	Find
DELETE	Delete
SHIFT+DELETE	Delete file immediately without putting it in Recycle Bin
ALT+double-click	Display properties
CTRL+right-click	Place alternative commands on the pop-up menu (Open With)
SHIFT+double-click	Explore and object; if the object does not have an **Explore** command, this starts default action (usually the **Open** command)
CTRL+F6	Display next child window
CTRL+TAB	Display next tabbed page or child window
CTRL+ALT+DEL	Reserved for system use

Who Are You? (Part II—Y2K To Do List) Y2K Alert

by **Howard**Belasco

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

Howard has been working as an independent consultant since 1992. As a consultant he implements, maintains, and manages Microsoft and Novell networking solutions, as well as other projects requiring computer expertise. His most recent projects include working as the Year 2000 Project Manager for a Fortune 100 trading group, as a Manager of Desktop Services for a Fortune 100 food company, as a mentor for a Fortune 100 insurance company, and as the Senior LAN Coordinator for a major Northestern hospital.
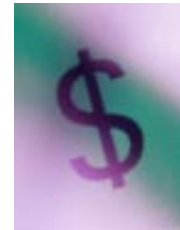
Howard is a former Chairman of the Board of Directors of The Network Professional Association. He can be reached via E-mail: **howard-belasco @worldnet.att.net**

(This article is a continuation of an article in January 31,1999 NICs pp.8–11)

This column can not possibly list all the items that you need to take into account in order to establish a financial position baseline, but let me give you a brief list of things to check off that might be helpful. This is not a complete list by any means and the list will be different for different people.

Look at each item and ask yourself "If their records were inaccurate in any way, would it cost me money? Would it cost me time? Would it effect my credit? How much exposure will I have if this record is lost or mis-stated?

❑ **Accountants** – What records does your accountant keep for you? Personal taxes? Business taxes? Are they in hard copy or just on his computer? Get hard copies of everything that he is holding for you.

❑ **Airlines** – If you are planning or have made reservations for 1999 or 2000, make sure you have hard copies of them. Get hard copies of your Frequent Flyer Miles and compare them each month.

❑ **Automobiles** – Make sure you have copies of all your lease agreements, purchase agreements, loan papers, Title, Registration, Inspections, License Plates, Warranties and Service Plans – Have these same items for your Boat, RV or Trailer

❑ **Associations and Clubs** – Do you have proof of membership? Have you been given receipts for payments, special services, such as amount held in escrow for building fund, greens fees? GET HARD COPIES of any and all of these. Check your accounts monthly and compare your expenses and make any corrections immediately.

❑ **Attorney** – What papers does he hold for you? Any amounts in escrow accounts? GET HARD COPIES OF THEM ALL. Get accountings of activities in writing.

❑ **Bank(s)** - (same for Savings & Loan and/or Credit Unions, Finance / Leasing Company) – loans outstanding, payments made, agreement papers– make sure that you have paper records of all transactions. Verify all balances and account numbers of the following:
   a. **Checking accounts**
   b. **Savings Accounts**
   c. **Safe Deposit Boxes**
   d. **ATMs**
   e. **Automobile Loans**
   f. **Trust Department**

❑ **Birth Certificate** – Have a certified, raised or embossed seal, paper copy.

❑ **Book Club** (Book-of-the-Month, Tapes and CDs) – Will they continue to send you items after the rollover? Will they send the right amount of items and bill the right amount? You must verify each month and correct immediately if not.

❑ **Brokers, Stock and Bonds, etc. Investments** (all types) – Verify with your broker just what your holdings are and then make sure to track them monthly. Be on the lookout for any changes that you did not specifically order and verify them immediately. Have a paper record from your broker of all transactions and keep it updated. Have a paper record of all stop-loss orders or automatic buy/sell orders.

❑ **Business Licenses** – DBA (Doing Business As) filings with the state, Title search for a corporate name.

❑ **Cable Television Provider** – Do the bills match each month? Have the rates changed? Do the calculations manually and compare them.

❑ **Cellular Telephone Co**. - Do the bills match each month? Have the rates changed? Are the additions correct?

❑ **Charge Accounts** (Department stores, pharmacy, grocery, Office Supply Co.) - Do the bills match each month? Have the rates

changed? Do all calculations by hand and compare.

☐ **Childcare, Daycare, or After School Programs** – Do you have hard copies of the contracts or agreements? Billing statements?

☐ **Church -** Business Office, Accounting and Memberships – A hard copy of what you have tithed? Marriage, death, or birth records?

☐ **Doctors** – Medical Records, Clinics, Etc. Ask your doctor for a complete copy of all your medical records including all blood work ups, MRI's, Stress Tests, any and all laboratory procedures. Get the records of all your hospital stays and all surgeries'. Get copies of all outstanding prescriptions.

☐ **Construction Permits** - Building Permits – Are you involved in a construction project of any kind? Have you had to get any kind of permits? Make sure you have hard copies of them all.

☐ **County Government** - Record keeping - Deeds, Mortgages, Birth & Marriage Records – Make sure to get hard copies of all of these.

☐ **Credit Card Companies** - AMEX, M/C, VISA, Gasoline, and department stores - Look inside your wallet for all the credit cards you carry and check the statements each month to verify that the correct charges are applied. Verify the calculations manually. Correct any errors immediately.

☐ **Dentist** –Get hard copies of all work done and a schedule of the frequency of future visits.

☐ **Electric Utilities** – Check your monthly billings. Read your meters and verify that the numbers match. Do the calculations manually and verify that the dollar amounts are correct.

☐ **Employer, Employee Records** – Check with your HR department and get hard copies of your records, including your years of employment, 401K or other pension contributions, health care coverage, sick leave and vacation schedules, your current amount of sick days and/or vacation days available and any other benefits offered.

☐ **Healthcare Facilities** (all types) – Hospitals, nursing homes, assisted living care centers, get hard copies of agreements, billing statements and compare every month.

☐ **Health Club Membership** – Do you have a copy of the contract you signed? If not, you should get one and compare your monthly statement to what was agreed on.

☐ **Hunting and Fishing Licenses** – Make sure you have a hard copy at all times.

☐ **Internal Revenue Service** - Do you have copies of all your filed federal taxes? Do you have copies of any agreements for payoffs? Have you been delinquent and have judgements been filed for back taxes? Have you been making payments? Do you have records of the payments? Have the judgements been paid? Do you have those satisfaction papers? Get and maintain hard copies of any or all of these.

☐ **Internet Service Providers** – Verify the number of hours you are online or number of days and make sure that you are being billed for that amount only. Check the statement by hand calculating the amounts owed.

☐ **Insurance companies** (all types) Insurance - home, life, auto, business – It is very important that you have hard copies of all these policies.

☐ **Lease**s (Vehicles, Apartment, Office, Property) – Check with your accountant and lawyer to find out what documents they have. If they have copies of any leases that you do not have a copy of, get a copy for your records. Do not allow ANYONE to have a copy of an agreement that you do not have a copy of.

❏ **Library Card** – Another ID card. Make sure there are no charges against you for overdue books.

❏ **Magazine Subscriptions** – Confirm with the publisher that you have a prepaid subscription and find out when it expires.

❏ **Mortgage Companies** – Do you have the copy of your mortgage and your deed? Verify with your accountant and lawyer to know who has the paperwork and make sure that YOU have a copy of ALL the documents. Make sure you have verifications of all the loan and escrow account balances. Make sure you get receipts for the payoffs from these accounts.

❏ **Movie Rental Card** – Similar to your library card, this is one more ID card to have and you must verify that your account only reflects what you have rented .If there are any discrepancies, you need to get them adjusted immediately.

❏ **Newspapers** – Do you get newspapers delivered at home? Verify and get a hard copy of your billing.

❏ **Optometrist** - Eyeglass stores – Get prescriptions of your glasses

❏ **Passport** – If you don't have one, get one. It is the best identity card you can carry, ranking equally with your driver's license.

❏ **Payroll Records** – Do you get a copy each pay period of your deductions? If not, contact your HR department and make sure you have a copy of that information and then keep it current.

❏ **Pension Records**, Retirement Account – If you are receiving pension benefits you MUST have copies of all your pension records. What monies are being received from what sources? Contact them all and verify your account numbers balances and pay out agreements. Get hard copies of all this and verify each months statements. Do all the calculating by hand to verify that the numbers are accurate.

❏ **Pets -** vaccinations, registrations, and licenses – Check with your veterinarian and make sure you have copies of your animal's health status. Verify with your local agencies about licenses and registrations and make sure you have all the necessary tags.

❏ **Prescription Cards** – make sure you have a manual card, not a magnetic strip for a card reader that might or might not work, or might not read correctly.

❏ **Private Schools** – Do you have signed original copies of agreements? Do you have copies your child's school records? Attendance, cumulative record cards? Teacher evaluations?

❏ **Schools and Universities** - Public Schools and Universities – Make sure you have complete and up to date records of attendance, grades, payments, and degrees granted.

❏ **Unemployment Benefits** – Verify that your information at the Unemployment Bureau is current. Resume, job interviews, account numbers, etc.

❏ **Unions**, - Do you have a dues check off through your employer? Do you have a record of the agreement? If not, get it. Get a copy of the current contract from your union and find out all your entitlements, paying special attention to pension, health benefits, sick and holiday schedules.

❏ **Voter's Registration Card** - A very good ID card to have. Contract the League of Woman Voters for information on how to register in your area if you are not registered.

Implementing Supporting Microsoft Windows NT Workstation 4.0 Exam Preparation

by **Rex**Moffitt

Exam Details
Exam Name: **NT Workstation**
Exam Number: **070-073**
Number of Questions: **15-25**
Passing Score: **547/1000**
Time to take Exam: **70 minutes**
Standard or Adaptive: **Adaptive**
Certifications Exam Fills OS Elective for: **MCSE Core** and qualifies for MCP

What to Know for the Exam

- Know how to uninstall NT.
- Know how to perform unattended installs.
- How SYSDIFF is used.
- What the .UDF files are used for.
- Names and functions of the registry sub trees.
- Differences between REGEDT32 and REGEDIT.
- What each Control Panel utility is used for.
- Differences between NTFS and FAT.
- Installation utilities and their command line option parameters.
- Differences in permissions both for Shares and Local Access.
- What happens to file permissions and properties when moving them between like and unlike file systems.
- How to share a folder, and who can do it.
- How to install networking protocols.
- How to use UNC pathnames.
- Which environments to user certain protocols in.
- What DNS, WINS, and DHCP are used for, and how they are implemented.
- How to setup RAS, and implement encryption.
- How to create, delete, modify and rename accounts.
- When to delete and when to disable an account.
- Policies and profiles, their differences and how they are used.
- How to set up a printer and document defaults.
- How to set print priorities and times.
- Printing pool concepts.
- The Emergency Repair Process.
- What sorts of errors occur if Boot.ini, NTLDR or the kernel is missing or damaged.
- How to use the Performance Monitor.
- How to use the Event Viewer.
- What the ARC naming convention is, and what the settings for it are.
- Application support and priorities

Installation

Minimum requirements for NT Workstation 4.0:

- 110M Free disk space
- 12M RAM (w/ Intel processor)
- 16M RAM (w/ RISC processor)
- 486-DX33
- CD-ROM (if not installing over network)
- VGA compatible display

Windows NT Setup

WINNT32.EXE is used to upgrade *only* from a previous version of Windows NT.

WINNT.EXE is used for the regular Windows NT setup, or an installation through DOS or Windows 95.

Upgrading from Windows 3.1x or a previous version of NT will keep all user, network and program settings.

There are no conversion options from Windows 95 to Windows NT that will allow you to

maintain user settings. To dual boot between the two, install NT in a separate directory and reinstall all your applications.

Command modifiers for installation:

/B	Put boot files on hard drive instead of using boot floppies (takes an extra 4-5MB of hard disk space).
/S	Specify source file location(s) - multiple locations will speed up installation.
/U	Specify answer file location for use with unattended installation - MUST be used with /s to specify source file location(s).
/T	Specifies location of temp directory created for install (/t:\<path\>).
/OX	Create the setup disks from CD-ROM or shared network folder. Used to replace damaged boot disks.
/F	Don't verify files. Can speed up installation.
/C	Don't check for free space when creating boot disks.
/I	Specify setup information (.inf) file. This file tells setup how to run. The default name is DOSNET.INF.

· Answer file - Used when performing unattended installs. Provides information that would normally be answered by the user during setup. Default name is UNATTEND.TXT.
· UDF (Uniqueness Database File) - Used in conjunction with the answer file when performing unattended installs. Provides information for settings that are user or group specific. Default name is $UNIQUE$.UDF.

To uninstall NT on a FAT partition, you will need to boot to DOS, run SYS.COM, and remove the WINNT directory and files.

Application Support

· SYSDIFF - Used to install applications. Takes a snapshot of your system before and after the installation, and makes note of all files that were added or modified during the installation. It then uses this snapshot for automated program installation to other systems.

· NTVDM (NT Virtual DOS Machine) - Provides a virtual environment for DOS applications. Allows each application to run in its own memory space. Each DOS application will run in its own VDM.
· WOW (Win16 on Win32) NTVDM - Provides a virtual environment for 16-bit Windows applications. By default, 16-bit Windows applications all run in the same address space in the same NTVDM.

16-bit Windows programs can be run in their own VDM. Click *Start*, *Run*. Choose the application you would like to run, then check the *Run in Separate Memory Space* box, and click *OK*. However, doing this requires more overhead - approximately 2MB per VDM.

A 16-bit Windows program that uses DDE (Dynamic Data Exchange) does not have to run in the default Win16VDM.

NT schedules threads to run by using application priorities. Application threads are assigned priorities, and run in order according to their priority level, from highest (31) to lowest (0).

Average base priority classes:

24	Real-time
13	High
7	Normal
4	Low

Starting applications in real-time mode can adversely effect other system processes and may even slow down total system performance. Because of this, running in real-time requires administrator or power user rights and is not generally recommended.

You can change the priority of a running application by running Task Manager -> Processes, right clicking the process and selecting "Set Priority."

Foreground application boost over background applications can be changed with the Control Panel -> System -> Performance utility.

Virtual Memory

Virtual memory can be controlled in the Control Panel -> System properties under the Performance tab.

The paging file size can be in/decreased here, and even distributed across multiple drives to speed up access.

From here, the paging file size can be changed and distributed across multiple drives.

The most efficient paging file is distributed on several drives but not on the boot or system drive.

The recommended initial paging file size equals the amount of RAM in the system plus 12MB.

Paging file size can increase during operation, but will not shrink. Page file size will be reset when the computer is restarted.

Multiple Disk Sets

Disk Striping	Divides data into 64k blocks and spreads it equally among all disks in the array. Needs a minimum of two hard disks. Does not provide fault tolerance.
Volume Set	Merges numerous partitions into one drive mapping. Drives are read one at a time. Does not provide fault tolerance.

Speed factors

- Disk striping will provide the fastest read/ write performance as it can read multiple disks at a time.
- Volume sets are slow, as only one drive is read at a time.

File Systems

NTFS has file level security, and is faster over 400M, but has a larger overhead (cannot format a floppy disk with NTFS) and cannot be read by DOS, WIN 3.1, WIN 3.1.1 or WIN95.

FAT16 is compatible with MS-DOS & WIN95. (Note: Win95 FAT32 is *not* NT compatible), but has no file-level security.

For upgrading NT3.51 HPFS you must convert that partition(s) to NTFS *before* upgrading the OS.

NTFS vs. FAT

FAT
- Files and directories on a FAT partition only contain the standard attributes of Archive, Read-Only, System and Hidden.
- Cannot set local security access on a FAT volume.

- Can convert the partition to NTFS by running CONVERT.EXE
- A FAT partition can be defragmented by booting with a DOS diskette and running DEFRAG.EXE
- File moved from a FAT partition to an NTFS partition retain their attributes and long-filename.

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

Registry
Sub trees

HKEY_LOCAL_MACHINE	Stores machine-specific information (hardware).
HKEY_USERS	Stores information for all users who have ever logged on.
HKEY_CURRENT_USER	Stores current user settings.
HKEY_CLASSES_ROOT	Stores OLE and file association, also tracks information regarding applications that have been installed.
HKEY_CURRENT_CONFIG	Stores information about the hardware profile used at startup.

REGEDT32.EXE allows permissions to be set, but cannot search for values, just keys.

REGEDIT.EXE can search for keys and values but does not support all data types, security menu, or a read-only mode.

Security

Share-Level Security - Governs user accesses a resource through the network. Can be implemented on NTFS or FAT partitions. Applied through the Sharing tab of the resource's properties.

File-Level Security - Governs local user file and folder security on NTFS partitions only. Applied through the Security tab of the resource's properties.

Share Security Levels

Full Control	• Is assigned to the Everyone group by default. • Allows user to take ownership of files and folders. • Users can change file access rights. • Grants user all permissions assigned by the Change and Read levels.
Change	• User can add and create files. • Grants ability to modify files. • User can change the attributes of the file. • User can delete files. • Grants user all permissions assigned by the Read level.
Read	• User can display and open files • User can display the attributes of the file. • User can execute program files.
No Access	• User cannot display, access, or modify files.

Permissions are cumulative, except for No Access, which overrides anything.

When a resource has both File-Level and Share-Level Securities enabled, the *most restrictive* security is given to the user.

File permissions override the permissions of its parent folder.

Anytime a new file is created, the file will inherit permissions from the target folder.

Copying within a partition	Creates a new file resembling the old file. Inherits the target folders permissions.
Moving within a partition	Does not create a new file. Simply updates directory pointers. File keeps its original permissions.
Moving across partitions	Creates a new file resembling the old file, and deletes the old file. Inherits the target folders permissions.

To lock the workstation after a period of idle time, use a screensaver password.

To disable access to the workstation, but allow programs to continue running, use the Lock Workstation option (from the CTRL-ALT-DEL dialog box).

To disable access to the workstation, and not allow programs to continue running, use the Logoff option (from the CTRL-ALT-DEL dialog box).

Auditing can be enabled in the User Manager. The Event Viewer is used to view audited events.

When using Event Viewer, only local administrators can see the security log, but anyone (by default) can view other logs.

Groups and Account Management

Creating new accounts requires only two pieces of information: username and password.

Duplicating an account requires three pieces of information: username, password and full name.
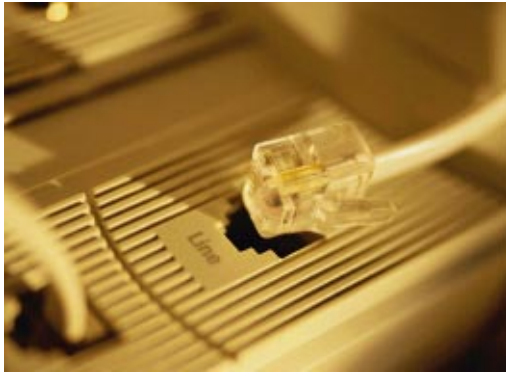
Disabling an account is typically used when someone else will take the users place or when the user might return.

Delete an account only when absolutely necessary for space or organization purposes.

When copying a user account, the new user will stay in the same groups that the old user was a member of. The user will keep all group rights that were granted through groups, but lose all individual rights that were granted specifically for that user.

NT Default Accounts

Backup Operators	Group designated for members to backup and restore computers from tape. Backup Operators can only backup and restore from tape when logged in locally to the computer. This group is found on all NT Servers.
Account Operators	Group designated for members to manage user and group accounts. This group is found only on Domain Controllers.
Server Operators	Group designated for members to manage resources, but cannot manage user accounts. Can backup and restore from tape. This group is found only on Domain Controllers.
Replicator	Group designated for NT computers to perform directory replication. This group is found on all NT Servers.

RAS (Remote Access Services)

RAS is capable of using the following connection protocols:

- SLIP - Has less overhead than PPP, but cannot automatically assign an IP address, and only uses TCP/IP.
- PPP - Can automatically assign IP addresses, supports encryption and other protocols besides TCP/IP.
- RAS - Used by Windows 3.x and Windows NT 3.x clients.

RAS supports call back security to either the calling number or to a specified, non-changing number.

RAS for NT 4.0 supports multilink (the use of more than one modem to achieve higher transmission speeds). Multilink *cannot* be used with callback security *unless* there are two (or more) ISDN modems configured on the same phone number.

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

To speed up NetBIOS resolution on RAS clients, put an LMHOSTS file on each client locally.

RAS encryption settings

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

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

Netware

NWLink (MS's version of the IPX/SPX protocol) is the protocol used by NT to allow Netware systems to access its resources.

NWLink is all that you need to run in order to allow and NT system to run applications off of a NetWare server.

To allow file and print sharing between NT and a NetWare server, CSNW (Client Services for NetWare) must be installed on the NT system.

CSNW print options

Print Banner	A banner, which states your login ID, the date and time, will be printed out prior to the job that has been sent to the printer.
Print Form Feed	Feeds a blank piece of paper through the printer after the print job has printed, in order to separate one user's printed-paper from another user's printed-paper.
Notify When Printed	After a job has been sent to the printer and has finished printing, a message will come up on the screen notifying the user that the print job has completed successfully.

Gateway Services for Netware can be implemented on your NT Server to provide a MS client system to access your Netware server by using the NT Server as a gateway.

Frame types for the NWLink protocol must match the computer that the NT system is trying to connect with. Unmatching frame types will cause connectivity problems between the two systems.

When NWLink is set to auto detect the frame type, it will only detect one type and will go in this order: 802.2, 802.3, ETHERNET_II and 802.5 (Token Ring).

Netware 3 servers use Bindery emulation (Preferred Server in CSNW). Netware 4 servers use NDS (Default Tree and Context.)

There are two ways to change a password on a NetWare server - SETPASS.EXE and the Change Password option (from the CTRL-ALT-DEL dialog box). The Change Password option is only available to Netware 4.x servers using NDS.

Networking

Computer Name Resolution:

· DNS (Domain Name Services) - Used to resolve DNS host name to an IP address.
· WINS (Windows Internet Naming Service) - Used to resolve NetBIOS computer name to an IP address.
· HOSTS - File which contains mappings between DNS host names and their IP addresses. Must be maintained manually.
· LMHOSTS - File which contains mappings between NetBIOS computer names and their IP addresses. Must be maintained manually.

TCP/IP is an Internet protocol currently used for most networking situations. Each computer using TCP/IP will contain a unique address in a

x.x.x.x format (where each x equals a number between 0 and 255) and a subnet mask.

Subnet mask - A value that is used to distinguish the network ID portion of the IP address from the host ID.

Default gateway - A TCP/IP address for the host (typically a router) that you would send packets to, to be sent elsewhere on the network.

Common TCP/IP problems are caused by incorrect subnet masks and default gateways.

UNIX computers use the TCP/IP protocol.

NetBEUI is a non-routable protocol that is used solely by Microsoft O/S's.

Universal Naming Convention (UNC) - Universal network pathname which is integrated into Microsoft systems. Named as \\computername\sharename, where computername = the NetBIOS name of the computer, and sharename = the share name of the folder.

Trap messages are sent using SNMP (Simple Network Management Protocol).

Profiles

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

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

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

You may copy profiles using the User Profiles menu located under Control Panel -> System Properties.

Policies

Policies take precedence over profiles.

Individual policies take precedence over group policies.

Machine policies take precedence over all policies.

Printing

Microsoft uses the terminology "Print Device" to refer to the physical piece of hardware, whereas a "Printer" is a conceptual idea describing the icon in the Control Panel.

NT 4.0 has the option to maintain drivers for different operating systems on the server. Each operating system uses different drivers. For example, NT 4.0, NT 3.51 and Win95 systems cannot use the same print drivers. By installing the drivers for each of these types of system on the print server, each of these types of clients can automatically download the driver they need without manual installation.

NT clients (3.51 and 4.0) automatically download updated drivers from the server. Win95 machines will initially download print drivers but will not automatically update to a newer version of the driver. Win 3.1x and DOS clients must have the drivers installed on each client manually.

- Print Pooling - Consists of two or more identical print devices associated with one printer.
- Availability - This option allows you to specify which hours the printer can be printed to.
- Priority - This option specifies which virtual printer should print first if other virtual printers are trying to print to the same physical printer at the same time. Priorities range from 1 - 99 with 1 being the lowest and 99 the highest.

You can select Restart in the printer's menu to reprint a document. This is useful when a document is printing and the printer jams. Resume can be selected to start printing where you left off.

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

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

Printing to a TCP/IP printer requires you to know the IP address and printer name.

The DLC protocol needs to be installed in order to connect to a HP print server.

The AppleTalk protocol needs to be installed to communicate with Apple printers.

Troubleshooting

To create a boot disk, format from the NT workstation you want a boot disk for (Win 95 and DOS will not work), and copy over the following files: NTLDR, NTDETECT.COM, BOOT.INI and NTBOOTDD.SYS (SCSI only).

To create an Emergency Repair diskette, you can choose to do so either during the installation of NT, or you can run RDISK.EXE. When RDISK.EXE is run with the /S option, the utility backs up user accounts and file security.

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

The Emergency Repair Process can a) inspect the registry files and return them to the state on the repair disk, b) inspect the startup environment, c) verify the system files and d) inspect the boot sector.

To troubleshoot bootup problems, you can edit the Boot.Ini file and add the /SOS switch to the end of the Windows NT entries in the [Operating Systems] section of the Boot.Ini file to display driver names while they are being loaded. The VGA startup option has /SOS added by default.

Use the Last Known Good option on bootup to restore the system to a bootable state if problems arise from switching video drivers or changing registry settings.

Common error codes:

- No system or boot disk message when

trying to dual-boot = BOOTSECT.DOS is corrupt

· Copy single file non-critical error - could not copy file = Occurs when the file already exists on the hard drive and is in use.

· Server stop errors - In the System Properties -> Startup/Shutdown tab, there are options to configure where you would like the Server stop errors to be written. The errors are written to a .DMP file that is readable by the program DUMPEXAM.EXE. You must have free space in a swap file on your boot drive equal to or larger than the amount of physical RAM in your system in order to generate a dump file.

ARC Naming Convention

The Advanced Risc Computing (ARC) path is located in the BOOT.INI and is used by NTLDR to determine which disk contains the operating system.

multi(x)	Specifies SCSI controller with the BIOS enabled, or non-SCSI controller. x=ordinal number of controller.
scsi(x)	Defines SCSI controller with the BIOS disabled. x=ordinal number of controller.
Disk(x)	Defines SCSI disk that the OS resides on. When multi is used, x=0. When scsi is used, x= the SCSI ID number of the disk with the OS.
Rdisk(x)	Defines disk that the OS resides on. Used when OS does not reside on a SCSI disk. x=0-1 if on primary controller. x=2-3 if on multi-channel EIDE controller.
Partition(x)	Specifies partition number that the OS resides on. x=cardinal number of partition, and the lowest possible value is 1.

multi(0)disk(0)rdisk(0)partition(1). These are the lowest numbers that an ARC path can have.

Performance Monitor

A. Memory - add more RAM if you detect problems with the following:

· Pages/sec - excessive disk paging. Should not be above 20.
· Available bytes - virtual memory available. Should not be below 4MB.
· Committed bytes - memory being used by applications. Should be less than RAM in computer.

B.   CPU - upgrade the processor if you detect problems with the following.

· %Processor time - amount of time the processor is in use. Upgrade if constantly over 80%.

C. System Object: Processor Queue Length - should not be over 2.

D. Disks - upgrade hard disk or controller, add another hdd controller to balance the load, or implement disk striping for multiple I/O channels if receiving inadequate disk performance.

· %Disk Time Counter - amount of time the disk is in use. Should not be over 90%.
· Current Disk Queue Length - files in disk queue. Should not be over 2.

Must run DISKPERF -Y to enable disk performance counters.

Alert view allows alerts to be made when the counters surpass the threshold you set.

Log view allows the tracked objects to be written to a log file. Used to create a baseline for future reference.

Report view gives the ability to present a concise report of current statistics

Toward More Professional Writing

by **Deni**Berger

Do you struggle when you are asked to write? It is hard to remember the rules of grammar and writing? As a network professional you may not have writing assignments very often, but here are a few learning tips that might help you when you do.

Writing professional documents may be hard, so we'll just start with the basics. First of all, you need to know who your audience is. Determining your audience will help you prepare your thoughts, so you can bestow the greatest benefit upon the readers. Next, you need to decide on a topic. What do you want to talk about, what is your purpose? Determining these key factors plot your course so that your article or document will flow smoothly.

Choosing the correct Grammar

Choosing the correct grammar is essential to creating a successful paper. For example, when writing, you would not say, "Me and Brian will fix the network tonight." Instead you would say, "Brian and I will fix the network tonight." To test yourself and the sentences that you write split the sentence up. Each subject should be able to fit in the sentence alone. Let's try it. "Me will fix the network tonight" or "I will fix the network tonight." You can see here that the first sentence does not sound correct. However, in our everyday talking we sometimes find ourselves saying me instead of I when I is more appropriate. By splitting the sentences you can clearly see that the word I is more appropriate to use in this case.

Using correct possessive case

Choosing the correct possessive case is often challenging. How do you know when to add an apostrophe and when to add an apostrophe *s*? Here is the rule, "To form the possessive for a singular or a plural noun, add ' *s*. If the noun ends in *s*, add only an apostrophe." *Effective Writing p. 12. (Stoddard and Waters)* Below are a few examples:

Singular	Plural
child = child's	children = children's
man = man's	men = men's
lady = lady's	ladies = ladies'
Robert = Robert's	Mr. Roberts = Mr. Roberts'
company = company's	companies = companies'
boss = boss'	bosses = bosses'

You can see here that all of the singular words end in apostrophe *s* except for the word boss. In some forms of writing it is required that you add an

apostrophe *s* anyway. For example, instead of having the word boss', you would use boss's. However, in most writing, because the word already ends in *s* you would only add an apostrophe.

When forming the possessive of a group of two or more words jointly you would only put an apostrophe *s* on the last word. For example, you would not say, "Brian's and Tammy's house caught on fire." Instead you would say, "Brian and Tammy's house caught on fire."

Conjunctions

Many people use words incorrectly when forming conjunctions. A conjunction is a word that is made up of two separate words by dropping one or more letters and adding an apostrophe before the last letter(s) such as can't and doesn't. Words often misspelled are it's and they're.

Many people use the word it's when forming a possessive. The correct usage of the word it's should only be used when you are saying it is. The form of the word they're is also misused often. Many people use the words there and their instead. A good way to check yourself when using conjunctions is to split the words. If you want to say they are then the correct conjunction would be they're.
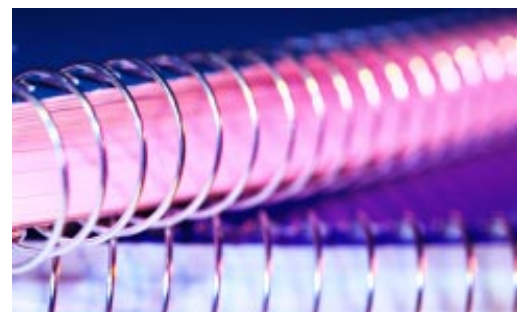
Neither, nor and Either or

Neither - nor, and either - or are also used incorrectly. When writing, one thing to remember is when using the words neither and either there are only two words that go along with them. Always use the pair neither - nor and either - or. Never use the pair neither - or and either - nor.

Touching your audience

Now that we have established the basic grammar rules, how do you touch your audience? It seems easy to do research and just state facts, but is this effective with your audience? You will find that if you make your facts into a story, you will touch your readers more than if you just stated the facts. In *The Art of Public Speaking, by Stephen E Lucas,* Lucas writes about how to touch your audience. He tells a story of a student who gives a wonderful speech about the hurricane in Galveston, TX. However, the student only states a few facts and the audience is left to wonder what really happened. It is important to state all of the important facts. Do not assume that the audience or reader knows what you are talking about just because you know what you are talking about. Although, the book is about how to give effective speeches, writing is much the same way. We must assume that when we write, it is much like when we speak.

Summary

Writing articles and professional documents is often difficult. Just remember to allot the time that you need for each project. If you need to

go to the library to find more information on your subject, take the time to do so. Be sure to know your rules of grammar. If you have questions about how a sentence should be structured, look it up. You will be glad you did. The more you practice, the easier it will become a habit for you.