

# NICs NETWORK INFORMATION CONNECTION

AN ESSENTIAL SUPPORT RESOURCE FROM THE INSTITUTE FOR NETWORK PROFESSIONALS

## Developing and Directing Team Output (*Part II*)

by **Darryl Alder**

*(This is a continuation of an article in February 20, 1999 NICs pp.1-3 [see <http://www.inpnet.org/NICs/3-99.pdf>])*

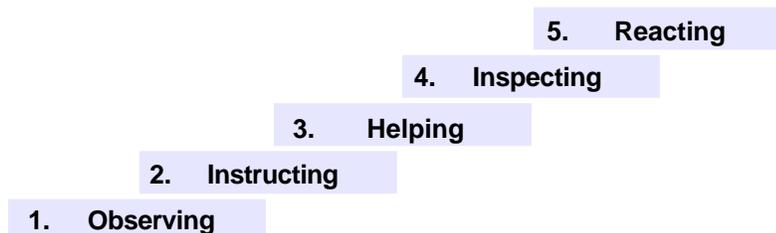
Some technology professionals consider human dynamics unclear nonsense or regard it as too mysterious and unpredictable to figure out. Such attitudes and a lack of interactive human experience can leave us short on career advancement. Motivation, delegation, communication, and facilitation are not usually part of certification or engineering courses. Yet these skills are vital to advance in an organization. Hopefully this article will be helpful in the process of developing your skills in this area.

As we presented in the last issue (see <http://www.inpnet.org/nics/nics3-99.pdf>), group development has four separate stages. To identify which stage of development a team is in takes some practice. You do this by looking at how the group get things done (task) and how they feel about each other (relationships). Teams move successively from forming to storming and then on to norming and finally performing. Good leadership in each stage requires different behaviors for effective direction of a group.

- In the forming stage a directive style is best.
- In the storming stage, coaching is best.
- In the norming stage a supportive style works best.
- In the performing stage, delegation is the way to go.

When this situational leadership approach is used, the group develops more quickly and moves through the various stages until group performance and individual involvement take hold.

The following steps show a process to help you direct and coach your team better:



This five-part procedure will be most useful in the first two stages of group development and is the focus of *Developing and Directing Team Output (Part II)*.

<http://www.inpnet.org/html/nics.htm>

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## What the Skill Can Do

Near the end of World War II, in 1945, Harry Truman succeeded to the U.S. Presidency after the death of Franklin Roosevelt. U.S. citizens did not see him as much more than a “bankrupt haberdasher.” Nonetheless he was their leader.

Immediately he faced some tough leadership decisions. Unfortunately Roosevelt had neither consulted him on foreign nor domestic problems. Despite these factors he presided over the final conquest of Germany, further development of the nuclear bomb and a delivery system to use them against Japan, which he did. In many ways Truman was forced into his leadership role. Yet after World War II, he seemed to accept the role.

By developing long-range foreign policies, he showed his new leadership skill. This included managing the growing crisis in Korea.



The peninsula, occupied by Japan for thirty-five years, was liberated after World War II, but divided in two at the 38<sup>th</sup> parallel. A communist dictatorship ruled the north. The south was ruled by an archconservative. Both countries had threatened and counter-threatened each other, then June 25, 1950 the North Korean army moved across the 38<sup>th</sup> parallel to invade South Korea.

Truman got the U.N. Security Council to agree to “a police action” restoring the status quo. After initial reverses, which forced the U.N. forces to withdraw into a small area in southeast Korea, U.S. General MacArthur launched an amphibious attack, far behind the North Korean lines. By November 1950, most of Korea was under U.N. control.

This upset Truman, since the General’s orders were to achieve status quo and stop at the 38<sup>th</sup> Parallel—Truman did not want to risk another world war by pulling communist China into the affair. MacArthur, however, had his own agenda and planned to march into China to stop the spread of communism. MacArthur even asked to use nuclear weapons.

Alarmed, the President rushed for a meeting between the two. MacArthur used the meeting to flex his leadership and show he had no use for his Commander-and-Chief. He failed to salute the President, offering only to shake his hand.

At the meeting, the two disagreed on how to continue the war. MacArthur assumed the leader-

ship role was his to have, but Truman refused to be bullied by MacArthur. He also made it clear how he felt about the General’s insubordination and the direction he was taking (a course, which ran counter to Truman’s policy for limited war in Korea).

Following the meeting, MacArthur called several press conferences to criticize the President’s policy. But soon, MacArthur’s push north, provoked the Chinese armed forces to act in self-defense.

Truman used each of the first four parts of the directing and coaching procedure with MacArthur, but to no avail:

1. He observed the General’s actions
2. He had sent and left clear instructions
3. He had visited him to offer help and give more implicit instructions
4. He inspected results first from reports, then from direct inspection. Since the results were not satisfactory, now a test of his leadership ability followed. He would have to react.
5. Reacting meant dismissing one of the USA’s most beloved war heroes, but he felt it was the right thing to do. In the end, he dismissed the General amid great criticism, but sure it was for the best.

In the weeks that followed, the whole complexion of the military scene changed. Chinese Communists reinforced the North Koreans and dealt a severe setback to U.N. forces (of which the majority was Americans). President Truman then placed the U.S. on a semi war basis, calling for a greatly expanded defense establishment, partial mobilization of industry, huge appropriations, and controls of wages, prices, and materials.

The cost to the “team” (not just U.N. forces, but all citizens in the USA) in this case was great. Luckily the President realized what was at stake and as the leader made the tough decision to ouster a renegade player before it was too late.

In your team interactions, you may have some tough calls too. But it’s more likely you’ll just need to stick to the business of following the five-part process—this process is usually enough direction to get people back on track.

## Understanding the Skill

Directing a group is an important function of leadership. Unfortunately the “whip-cracking boss” comes to mind for many of us when we think of controlling a group. Good direction is subtler than that. It usually follows the five step process introduced earlier in this article.

- 1. Observing.** The leader should be in a position to look at the group’s work and interactions. He or she should communicate with the members and be available, but not dominate. Good work should be noticed and praised. Suggestions for improvements, rather than orders, should be given.
- 2. Instructing.** The leader offers additional instructions as the work proceeds and the situation changes. The leader must communicate well, apply the skill of effective teaching, and allow members to use their own initiative. As long as the work is progressing, the leader should not intrude.
- 3. Helping.** When a group has decided that it wants to perform a task, the leader must help the members be successful. He does his own job well, takes a positive approach, and gives a helping hand when needed. Jumping in to help is a strong catalyst for action. However, care should be taken to see that an offer to help is not implied criticism.
- 4. Inspecting.** A leader must know what is expected and have a plan to get it. A checklist of outcomes is valuable. If the work is not correct, lead the person to the proper performance of the task. Again, a positive approach with helpful suggestions for improvements is vital.
- 5. Reacting.** How the leader reacts to the efforts of the group is important. Praise the group’s work if it is good (but praise must be sincere). If the work is not correct, praise the parts that were done well and accept some responsibility for work not done right. Saying, “It looks like I didn’t explain it very well,” doesn’t hurt the leader and helps the team feel good about suggestions. React to the total job—don’t focus on the obvious weak points, but don’t let shoddy work slide by either. If some individual performance needs improvement, do the correcting in private.

## Putting the Skill to Work

Begin by selecting a target group. Put yourself at the helm, observe the things they do. Figure out what stage they are in. Then ask yourself, “Do I do something well enough to teach them? Should I step in now to help or get them to help each other? How can I help them see the end product and tell them what I think?” Then act on the answers you list.

Directing skill are needed for team leadership on the part of the technical professional as much as technical abilities are needed to do the job. Start to develop them now by looking for ways to use the five-step process. If you are not in a work group, practice at home with a child or in a volunteer position.

With so many organizations using resources and time in developing and transitioning to teams its unfortunate some networking professionals are being left out of management opportunities. There is no reason for you to be one of those left out. All you need to do is strengthen your people skills. But remember making teams work is a challenge, especially with IT staff. It is likely you have free-spirited mavericks, working alongside born team players with a few asocial characters mixed in. Don’t allow yourself to get discouraged. Just follow the process and trust it to take you where you need to be.



## Summary

If a plan is going to be carried out well, someone must direct the effort. This is how any job gets done. To get any group of people going the same way to get the job done requires direction. The group either consciously or unconsciously assigns this function to the team’s leader. If there is no formal leader, then an informal one will emerge, even if it’s just to share leadership.

Think back to a time you’ve heard, “Come on, let’s get our act together!” This is a plea for someone to take charge and bring the group under control. Most teams welcome some direction, especially when it is skillfully done. Knowing this and understanding the stages of group development, a leader’s influence has a powerful effect on how and when the job gets done and how well the group develops in the future. Here’s your chance. Good luck on doing your part. ✚

# Implementing Supporting Microsoft Windows NT Server 4.0 Exam Preparation

by RexMoffitt

## Exam Details

Exam Name: **NT Server**

Exam Number: **070-067**

Number of Questions: **25–30**

Passing Score: **545/1000**

Time to take Exam: **90 minutes**

Standard or Adaptive: **Adaptive**

Certifications Exam Counts Toward: **MCSE Core, MCP, MCP+I, and MCSE+I**

## What to Know for the Exam

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

- How the browser services work.
- ARC naming convention.

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

Setup disks can be created by running WINNT.EXE /OX or running WINNT.EXE from the CD-rom.



- 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.

In the server properties menu, there are options to optimize server memory for some situations.

<b>Minimize Memory Used</b>	Allows memory to be allocated for up to 10 network connections.
<b>Balance</b>	Provides memory for up to approximately 64 connections (default).
<b>Maximize Throughput for File Sharing</b>	Optimizes server memory for file sharing operations.
<b>Maximize Throughput for Network Applications</b>	Optimizes server memory for server-based network applications. Key word is SQL.

## 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.

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

### Speed factors

- Disk striping will provide the fastest read/write performance as it can read multiple disks at a time.
- Disk striping with parity is slower, as it has

to write the parity information, but is still faster than disk mirroring and volume set.

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

<b>Disk Striping</b>	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.
<b>Disk Mirroring</b>	Duplicates a partition on another physical disk. Provides fault tolerance by keeping data stored on two different disks, in case of drive failure.
<b>Disk Duplexing</b>	Duplicates a partition on another physical disk that is connected to another Hard Drive Controller. Provides fault tolerance by keeping data stored on two different disks, in case of drive failure, and by having two hard drive controllers, in case of drive controller failure.
<b>Disk Striping with Parity</b>	Distributes data and parity information across all disks in the array. The data and parity information are arranged so they are always on separate disks. A parity stripe block exists for each row across the disk. The parity stripe is used for disk reconstruction in case of a failed disk. Supports a minimum of three disks and a maximum of thirty-two disks.
<b>Volume Set</b>	Merges numerous partitions into one drive mapping. Drives are read one at a time. Does not provide fault tolerance.

To recover from drive failure with disk mirroring, you must install the new drive, boot the system into NT, run Disk Administrator, break the mirror from the Fault Tolerance menu, and then reestablish the mirror. This will not be done automatically.

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

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



## 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.

### FAT vs. NTFS

#### **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.

## Security

### Share Security Levels

<b>Full Control</b>	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.
<b>Change</b>	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.
<b>Read</b>	User can display and open files. User can display the attributes of the file. User can execute program files.
<b>No Access</b>	User cannot display, access, or modify files.

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

**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.

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.

The priority of attributes to a file is:

- 1) File
- 2) Directory
- 3) Share

File attributes override directory attributes, which override share attributes.

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

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

<b>Backup Operators</b>	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.
<b>Account Operators</b>	Group designated for members to manage user and group accounts. This group is found only on Domain Controllers.
<b>Server Operators</b>	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.
<b>Replicator</b>	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

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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.

RAS will default to the first network protocol on each side of the connection. Thus, if NetBEUI is the first protocol that is in common, Winsock applications (such as a web browser) will not be available to the client.

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

### RAS encryption settings

<b>Allow any authentication including clear text</b>	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.
<b>Require encrypted authentication</b>	This option will support any authentication used by RAS except PAP.
<b>Require Microsoft encrypted authentication</b>	This option will only make use of Microsoft's CHAP (Challenge Handshake Authentication Protocol). All Microsoft operating systems use MS-CHAP by default.
<b>Require data encryption</b>	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 an 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. Both NWLink and CSNW are automatically installed when Gateway Services for Netware is installed.



Gateway Services for Netware can be implemented on your NT Server to provide a MS client system to access your Netware server by using the NT Server as a gateway. You must have a group account setup on the Netware server called NTGATEWAY. In this Netware group you add user accounts of all the NT accounts you need to access the Netware server. However, a single account is all that is needed in the NT Server is used to access Netware resources for all NT users.

NWLink is automatically installed when Gateway Services for Netware is installed.

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. If multiple frame types are in use, you should manually specify each frame type. If NT is set to auto sense the frame type it will only detect one frame type and in the following order: 802.2, 802.3, Ethernet\_II and 802.5 (token ring).

If you decide to convert a Netware server to an NT Server, you will first need to implement the NWLink and Gateway Services for Netware on the NT Server. Once the conversion has completed, you will need to make sure all Netware workstations have had the Microsoft (SMB) redirector installed on their systems to access the NT Server.

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 that you would send packets to, to be sent elsewhere on the network (typically a bridge or a router).

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

Install a WINS server in addition to a DNS server to alleviate traffic due to b node broadcasts.

If bandwidth is hogged by a particular group of users on a TCP/IP network, create a separate physical subnet by installing a 2nd NIC on the server, installing a new hub, and putting the problem users on this hub.

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).

## Policies

Policies take precedence over profiles.

Individual policies take precedence over group policies.

Machine policies take precedence over all policies.

## 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.

## 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.

Use the PCL.SEP separator to switch from PostScript to PCL.

Use PSCRIPT.SEP separator to switch from PCL to PostScript.

## 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.

## PDCs and BDCs

To upgrade from a member server to a BDC or PDC, NT Server must be reinstalled.

To downgrade from a PDC or BDC to a member server, NT Server must be reinstalled.

To change a PDC to a BDC, or a BDC to a PDC, you must promote a BDC to a PDC in the Server Manager. There is no "Demote" option, only Promote a BDC. NT will disconnect the current PDC if online and handle everything automatically.

A BDC cannot automatically promote itself when the PDC becomes disconnected from the network. A BDC will continue to service login requests during the time that the PDC is unavailable.

## 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.

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

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

## Performance Monitor

**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.

**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%.

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

**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

## UPS

Wrong polarity setting (e.g. positive instead of negative) can make the UPS alert service not work. Instead of getting warnings and a clean shutdown, you'll get an abrupt power off when the juice is gone from the UPS.

Using a standard RS-232 cable instead of a special UPS cable can cause unpredictable results, including BSOD. 

<b>multi(x)</b>	Specifies SCSI controller with the BIOS enabled, or non-SCSI controller. x=ordinal number of controller.
<b>scsi(x)</b>	Defines SCSI controller with the BIOS disabled. x=ordinal number of controller.
<b>Disk(x)</b>	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.
<b>Rdisk(x)</b>	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.
<b>Partition(x)</b>	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.

## Browser Services

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

# Windows NT Tips and Tricks

by Lance Jensen, Executive Software Tech Support Representative

*This group of tips deals with the efficiency of Windows NT and your machines.*

## Speed up Windows NT Explorer

If you have a large number of folders on an NTFS partition, you may be able to speed up Windows NT Explorer by **telling Windows NT to not update the Accessed time**. Click the Start button and Run, and enter REGEDT32. Select HKEY\_LOCAL\_MACHINE, then System, CurrentControlSet, Control, FileSystem. In the Edit menu, click Add Value. For Value Name enter NtfsDisableLastAccess Update and set the Data Type to REG\_DWORD. Enter 1 for the value.

## Find Utility

If you frequently use the Windows NT Explorer Find utility to find the same file or set of files, **you can automate the search**. The next time you run Find, \*after\* you have entered your settings and clicked Find Now, click Save Search in the File menu. This creates a Desktop icon. When you double-click it, Find will come up with the settings in place. You can also invoke the Find utility by simply clicking anywhere in the Desktop, then pressing F3.

## Priority

Foreground applications run at the highest priority by default. If you often do other tasks while waiting for your primary application to complete in the background, **you can speed up the primary application by changing priorities**. In ControlPanel/System/Performance, move the Application Performance slide switch to None or the middle position.

Background applications normally run at priority 8. You can **change the priority to Low (4), High (13) or Realtime (24) by running the application from the "start" command**, such as "start/high <app\_name>." You must be a member of the Administrator group to set an application to Realtime.

## Fonts

The **more installed fonts** you have, **the slower your system will run**. Fancy fonts may be fun, but they cost in terms of performance.

## Screen Savers

Screen savers can **use a lot of CPU time**. If you have applications such as Diskeeper running in the background, a screen saver may slow or stop them. Active screen savers should not be used on servers, as they can interfere heavily with data requests from the network.

## More Memory

If you need more memory but can't get it yet, **try increasing the pagefile size**. You can have more than one pagefile, and can set the sizes to anything from 2MB to almost the whole partition. Pagefiles are adjusted in ControlPanel/System/Performance/Change.

## Pagefile (Virtual Memory)

Many systems will show **better performance with a pagefile on each partition**. This is also useful as "emergency free space"; if you need more free space on a partition, you can reduce or remove its pagefile.

It's also a good idea to keep the **pagefiles as contiguous as possible**. Select a partition with no pagefile, then defragment it in Diskeeper's manual mode. When it's done, create the pagefile, setting Initial and Maximum to the same value. The new pagefile will be contiguous (or nearly so, depending on several factors), and will stay in the same condition.

## Bypassing the Recycle Bin

When you are deleting files to free up disk space, you can save having to empty the Recycle Bin by **holding down the SHIFT key while you delete**. This prevents the file from going to the Recycle Bin.

## Know How Much Space is Free

To find out how much free space there is on a partition, **bring up Windows NT Explorer and right-click the root folder of the partition, then select Properties and click the General tab**. You will see the exact amount of free and used space.

## Start Menu Delay

You can change the Start menu delay in displaying sub-menus. Bring up REGEDT32. Go to HKEY\_CURRENT\_USER\ControlPanel

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*Reprinted with permission from Executive Software International, Inc., the developer Diskeeper®—the standard in network defragmentation and increased system performance—and Undelete® for Windows NT—providing up-to-the-minute file protection for Windows NT networks. For more information see <http://www.executive.com>*

\Desktop, MenuShowDelay:. Set REG\_SZ: to anything between 0 (fastest) and 4000 (slowest).

## Start Menu Submenus

You can **adjust the contents of the submenus by selecting Start/Settings/Taskbar/StartMenuPrograms/Advanced**. Programs can be added or deleted, but you can also edit the lines. If you have a sub-sub-menu appearing on the left side of the screen, you may be able to bring it over to the right side by shortening program names. This is especially useful if you sped up the menu delay, as a short delay may not allow you enough time to drag your cursor across the screen.

## Windows NT Without a Mouse

You can make your way around Windows NT without a mouse, if necessary. **Press**

**<CTL><ESC> to get into the Start menu, then use the arrow keys to move around.**

Sub-menus will not automatically display; use the right arrow to enter, left arrow to leave. **<RETURN>** invokes the highlighted application,

**<ESC>** exits the menu. When you are in an application, **<ALT>** activates the menu bar, **<ESC>** exits the menu bar.



## Bypassing Application at Startup

If you have applications or tools that start when you log on, you can bypass them and prevent them from starting. After you have entered your password and clicked OK or **press ENTER, hold down the SHIFT key** till the logon has completed.

## Selections With Timeout at Zero

On boot-up, you get a menu of operating systems to select. If the timeout is set to zero, you can still manage to make a selection. In the screen just before the menu appears, hit the down arrow. When the menu comes up, the timeout will not appear, and the second item on the menu will be highlighted.

## Launch Windows NT faster

Launch Windows NT faster by **adjusting the boot delay to 5 seconds or less**. To make the change, open Control Panel/System and select the Startup/Shutdown tab. In the Show List For

control, change the setting to the desired boot delay value. To bypass the boot menu altogether, set the delay value to 0.

## Finding the Windows NT Key Number

Your Windows NT Key Number is saved in the registry. Run REGEDT32 and select HKEY\_LOCAL\_MACHINE, then Software, then Microsoft, then WindowsNT, then CurrentVersion, then ProductId. You'll find the number like 12345-nnn-nnnnnnn-12345. The "n"s are the Key Number.

## Shut Down Program on Taskbar

To shut down a program listed on Windows NT's taskbar, **right-click on its button and choose Close**. You may be prompted to terminate the program prematurely if it doesn't shut down in an orderly fashion.\

## PAGEFILE FRAGMENTATION, PERFORMANCE, AND SOLUTIONS

Pagefile fragmentation can impact system performance. How much depends on system configuration and use. Here is a guide to how much of a problem pagefile fragmentation can be, along with some solutions.

### Impact on the System

Pagefile fragmentation can affect your system in two ways. **First**, it can prevent some files from being created contiguously. This is because the pagefile fragments, being scattered all over the disk, may break up the free space so there is less space to hold the larger files. It can then take longer to write new files and read existing ones.

**Second**, paging activity can be slowed down, depending on the degree of pagefile fragmentation. If the pagefile fragments are larger than 64KB each, fragmentation isn't a problem, because only 64KB (the system limit) is read at a time. So even if you have a 100MB pagefile in one large contiguous location, it would still take 1,500 I/Os to read the whole thing. But if the fragments are smaller than 64KB, then you have multiple I/Os just to read one chunk of data.

Additionally, the data itself isn't necessarily contiguous – for example, if a program has 60KB stored in the pagefile, the data may reside in three widely-separated 20KB pieces.

And with an extremely fragmented pagefile, say 100MB in size with ten thousand fragments, you'll notice a very noticeable lag every time it is accessed, since each pagefile fragment averages only 10 KB. Normally, however, a pagefile is fragmented into somewhere between 1,000 and 4,000 fragments, so this performance drag isn't as drastic on an average system.

On most systems, the pagefile has different Initial and Maximum sizes. Until the Initial limit is reached, the file usually tends to be contiguous, because the Initial limit space is created all at one time. But after the Initial limit is reached, the additional parts of the pagefile tend to be fragmented, because no space has been created in advance. This is done in an effort to save disk space, as the additional space (the Maximum setting) may never be used. Thus the first data to go into the pagefile is more likely to be contiguous, and can be read with a single I/O. The later data may be fragmented and take longer to retrieve.

Next, you need to consider how often the pagefile is used. An average business NT site has many processes running simultaneously, or the machine is a server serving many users, or runs memory-intensive applications such as graphics or video. In such a case, a fragmented pagefile may impact performance, depending on usage and other factors. Of course, if you only run one application at a time, and this application doesn't use a lot of memory, you may never use the pagefile at all, and pagefile fragmentation is not worth spending any time handling.

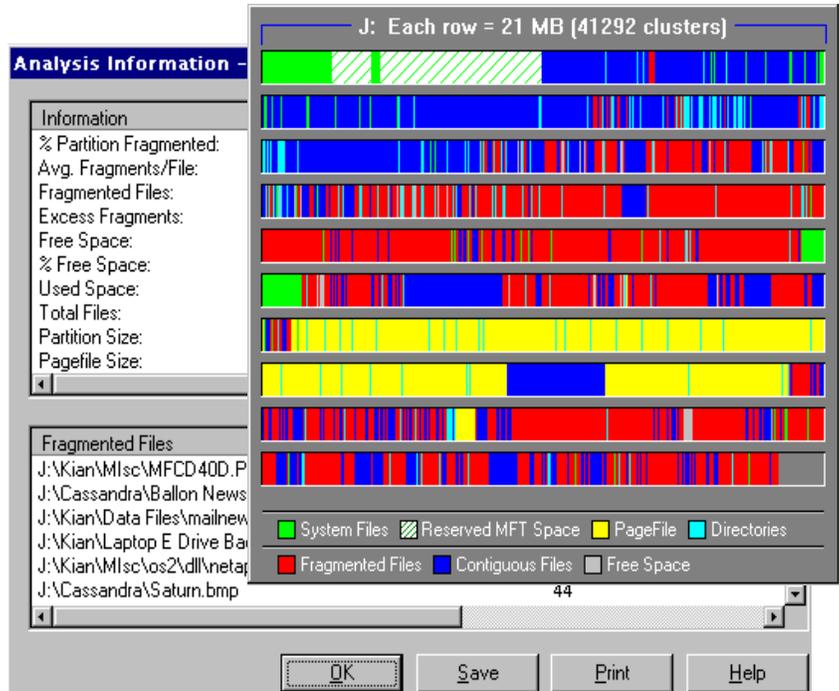
### Defragmenting the Pagefile

The pagefile is open for exclusive use by the Windows NT system. While there is no tool to automatically defragment it, there are ways to defragment the pagefile, or at least reduce the degree of its fragmentation.

This method is fairly simple, but it requires having more than one partition, and you need Diskkeeper 2.0 or later:

1. Create a new, temporary pagefile on another partition.
2. Set the fragmented pagefile initial and maximum sizes to zero.
3. Reboot.
4. Run Diskkeeper in the Manual mode on the partition where the original pagefile

- resided. You may have to run it two or three times to consolidate the free space.
5. Recreate the pagefile on the original partition.
6. Set the initial and maximum sizes of the temporary pagefile to zero.
7. Reboot. This activates the new pagefile on the original partition.



Use the following method if you only have a single partition. This also requires Diskkeeper 2.0 or later:

1. Set the fragmented pagefile initial and maximum sizes to zero.
2. Reboot. Since you no longer have a pagefile, you will be warned; ignore the warning but be aware that your system performance will temporarily be slowed until you recreate the pagefile.
3. Run Diskkeeper in the Manual mode. You may have to run it two or three times to consolidate the free space.
4. Recreate the pagefile on the original partition.
5. Reboot. This activates the new pagefile on the original partition.

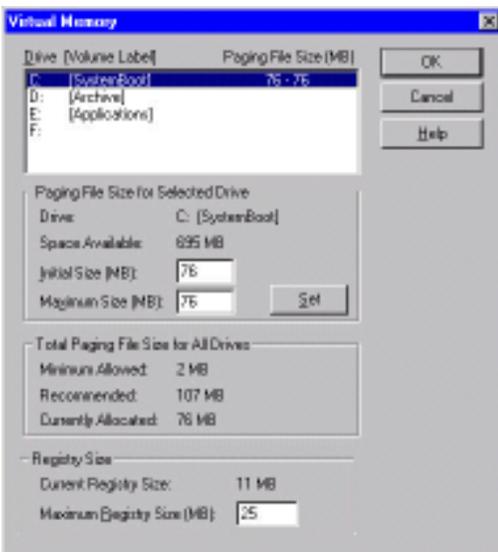
If you are running Diskkeeper 1.0x:

1. Create a new temporary pagefile on another partition. If you only have a single partition, skip to Step 2.
2. Set the fragmented pagefile initial and

- maximum sizes to zero.
3. Reboot. If you did not create a temporary pagefile, you will be warned that no pagefile exists. You can ignore the warning but be aware that your system performance will temporarily be slowed until you recreate the pagefile.
  4. Manually create a new file on the partition where the fragmented pagefile existed. Make it as large as you want the pagefile to be, and name it pagefile.sys. (A file can be “created” by copying an existing file of the size required and renaming it “pagefile.sys”.)
  5. Run Diskkeeper on the original partition till the new file is contiguous.
  6. Recreate the pagefile on the original partition. You will be warned that a file named “pagefile.sys” already exists, and will be asked if you want to overwrite it. Do so.
  7. Reboot. This activates the new pagefile.

recommend that you set the pagefile Initial and Maximum sizes to the same value. This prevents the pagefile from fragmenting in the future.

- The pagefile can reside on any partition, and you can have as many pagefiles as you have partitions. The ideal arrangement is one large pagefile for each disk controller. This gives you the fastest access. Next best is one pagefile per disk. This is less than ideal only because the controller can only access one disk at a time, so it’s a little slower. Third in rank is having more than one pagefile on a single hard disk. This can be much slower because the read/write head has to move from one partition to another if both pagefiles need to be accessed.
- If you have a pagefile on the system partition that is larger than the total amount of system memory, then, if a blue screen crash should occur, the contents of the memory will be written to the pagefile. This can be very useful for determining why the crash occurred.
- Pagefiles are an efficient way to get some benefit from spare disk space. You should keep at least 20% free space (Microsoft is currently recommending 25%) on each partition, as performance drops off rapidly as the disks become fuller. If you have even more free space, you can make additional pagefiles (but only one per partition). If you run memory-intensive applications such as document scanning, five or six hundred MB of extra pagefile can dramatically increase your throughput.



## Other Useful Points

- A pagefile can be created with different Initial and Maximum sizes. The advantage of this is having a higher pagefile capacity available without permanently using disk space. However, with hard disk prices as low as they are now (and still dropping), this is not much of a concern any longer. We



## Tips and Tricks from the Institute Lab

### Running \i386 from a Hard Disk

If you installed NT from a CD-ROM, the NT Registry always looks back to the CD-ROM for additional files. If your CD-ROM is set to drive D:, then Windows will be looking to D:\i386\ for system installation and driver files.

In order to reset this to a local drive, you’ll need to first copy the \i386 directory in its entirety to a local hard disk. (We’ll use C:\i386 in our example)

Now click Start, Run, type in regedit, then click OK (or press Enter).

After RegEdit opens, find your way to HKEY\_LOCAL\_MACHINE\SOFTWARE\Microsoft\Windows NT\CurrentVersion. In the right pane, you’ll see that SourcePath is set to d:\i386. Change this value to reflect your local hard drive, C:\i386. Now choose Registry, Exit.

After you restart your computer, the new path will take effect.

*(Remember all your Mother’s warnings concerning being careful whenever working on the registry)*

# Y2K Alert!

## Impact

by **Howard Belasco**

Many folks have been predicting that financial packages will be impacted before 2000 and possibly as early as 1/1/1999. Some Y2K problems, in fact, have already shown up in purchasing and inventory programs. For some people, and especially those in the accounting fields, the impact will be felt early on all those systems that read a year forward in their standard processing. This problem has been named the "Jo Anne Effect," after one of the regular contributors on the comp.2000 newsgroup, Jo Anne Slaven. Jo Anne first saw the problem and defined it. I will let her explain it in her own words.

"The main premise of the Jo Anne Effect has always been that problems may occur when a company has a fiscal year containing dates in both 1999 and 2000. Difficulties may be encountered when the accounting software has to sort dates with years '99' and '00' in the same fiscal year.

"Being an accountant who has worked with many mainframe and PC accounting systems, I can tell you that when a new fiscal year starts, the system has to know what the last day of the fiscal year will be. For a fiscal year beginning on, say, April 1, 1999, there will be 12 monthly accounting periods it will have to recognize: April 30, 1999 up to March 31, 2000."

If this is all true then we should begin to see Y2K problems popping up early in 1999. Well, sure enough, we just saw the Jo Anne Effect come to life. On December 23, The New York Times reported that 11 states admitted they could not pay unemployment benefits after 1/1/1999 because their programs could not read 00 as a real date. A real, honest to gosh Year 2000 problem, just as predicted. How was this Y2K problem handled? The New York Times tells us:

"Some state contingency plans call for checks to be issued by hand. Under other plans, people would be certified as eligible for benefits through Dec. 31, 1999, even if they were actually eligible for a longer period running into the year 2000. Alternatively, a state having difficulties could seek help from other states with extra computer capacity."

So the answer to this problem, as with so many other **natural** disasters, was that those that had, joined forces and gave to those that didn't have. In some other cases, creative management used some spit, glue, and baling wire workarounds to correct the problem for now, while continuing to work on the problem for a permanent resolution.

In an email exchange with Charlie Register, he reminded me that when asked how they managed to put out a newspaper during the recent San Francisco blackout, the San Francisco Examiner's executive editor Phil Bronstein replied, "It was a combination of 21st-century technology with 19th-century kind of chewing gum, glue and spit." A portent of things to come, I believe.

Please don't think that this is typical. There are many systems that can not be patched with chewing gum, spit, glue and baling wire. We will have some serious problems in the future, but every one of these problems that we have and resolve now will be that many we will NOT have to deal with in 2000. Workarounds can be effective when the technology still exists and technicians to execute that technology still exist, but this will not be the case in all instances. One of the remedies proposed, as a solution for the systemic failure of large systems has been to revert to past skills in the effected area. We hear talk of working by hand, or of resurrecting old technology. Writing checks by hand, as we saw in the unemployment benefits problem, is one potential solution. But sometimes, reverting is not possible.

I can remember when a good friend of mine got a job as a hospital chemist, 35 years ago. There, she used mainly manual techniques to determine blood values that doctors needed to diagnose patients. She would receive a blood sample and spin down the blood in a simple centrifuge. Then she would pipette a specific, (measured by eye), amount of the serum into a test tube. Then she pipettes a measured (by eye) amount of reagent into the test tube, heat it for a specific period of time (measured by an egg timer) and then places it into a machine



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

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

(analog and not digital) that reads the color and gave a result. She would then take that result and, using other values from charts and a slide ruler, calculate the blood value that the doctor needed. This usually took anywhere from 20 minutes to an hour for each specimen and all done manually. Blood could be batched to do as many as 50 at a time during the same period. She reports:

“Now, the blood is received from the patient and the test tube inserted into a machine and the results are read within minutes. That machine is not Y2K compliant. Our contingency plan to revert to old techniques might or might not work here but almost none of the elements are currently available. The simple centrifuge either no longer exists or lives in dusty closets, long forgotten. The reagents no longer exist. The pipettes are not available. Most importantly, the procedures are no longer known (they are in a book that is around here somewhere) and the technicians capable of doing that chemistry work are mostly retired or have moved on, past the technician functions. It would take considerable effort to reinstate the ‘old ways’ and I am not even considering the productivity factors here. The new machine can do hundreds of tests in minutes while the old techniques did a hundred an hour.”

Many things are too complex to be fixed in the time available until the rollover, but some “simple” things, mechanical in nature, can be fixed simply and with not much effort. One that comes to mind is the problem of traffic lights. This is one of those nuisance, “one thousand cuts” problems that draw resources from major issues, but the failure of traffic lights that control intersections in all cities would slow traffic to a crawl if not to a standstill. The simple act of getting supplies from one point to another becomes a nightmare in terms of time to complete and in cost. There might be too many problems that will be caused by the **lack** of a product to tolerate fewer products being delivered because of traffic tie-ups.

In the case that follows we are presented with a hardware situation where turning back the clock could really work. Just remember that this solution is limited to the specifics enumerated by Pam and Ron. Larry Sanger starts us off by reporting the possible solution in the comp.software.year-2000 newsgroup, to which Pam and Ron respond.

Subject: Re: Does The Date Have To Change?  
From: “Larry Sanger”  
sanger@y2kreview.com  
Newsgroups: comp.software.year-2000  
Not that Evansville is a “major agency or company or nation” — so, FWIW,

### City Rolls Back Clock as Y2K Solution (Herb Marynell, Evansville Courier [Indiana])

[http://courier.evansville.net/cgi/view.cgi??199812/09/+y2k\\_news.html+19981209](http://courier.evansville.net/cgi/view.cgi??199812/09/+y2k_news.html+19981209)

“David Savage, Evansville traffic consultant, said that by ‘punching 1972 in as the year on Jan. 1, 2000, the traffic lights at 200 intersections in the city and county will maintain the proper cycles required for weekdays and weekends.’ Savage called this ‘a no-cost solution’; ‘It should work’, Savage says, because ‘the days and dates in both years are the same.’ Computer reports will state the wrong year, but ‘we don’t care what year the reports say,’ Savage said. The system in question doesn’t keep track of year changes; every Jan. 1 they have to tell the computer what year it is. Savage said, ‘some additional testing is needed on a few more controllers at intersections to ensure all devices will function properly. More than 90 percent of the controllers already have been tested’, he said.”

Pam agrees and explains further –

This system appears to fit the three conditions necessary to use the clock-roll-back fix\*:

- 1) The device(s) are capable of being set to 1972
- 2) There is (apparently) no historical data to worry about
- 3) It’s a closed system — no automated inputs from somewhere else (such as a timeserver) and no automated outputs to other systems (which would require a bridge of some kind) — and the user can tolerate incorrect dates in the reports.

\* These are the areas of concern I discuss in the FAQ, are there others?

—  
Pam

Unofficial c.s.y2k smallish FAQ  
<http://www.compute.pro.com/~phystad/csy2kfaq.html>

Ron Martell further explains -

This is probably one of the best possible examples of where a 28-year setback will work.

- 1- Not PC based so 1972 is an allowable date



- 2- No data interchanges with other computer systems
- 3- No processing or accumulation of historical records
- 4- No legal or operational needs to report the correct calendar date.

However, any computer system that does not meet all of these criteria would be very difficult to operate on a date setback basis.

Ron Martell    Duncan B.C.    Canada

These techniques have some value in mechanical and small-scale systems but fail mightily in the mega-systems of large corporations. Bill Hoyt details one of these problems for us in a post to the comp.software.year-2000 newsgroup.

“At Universal Underwriters Group, implementation of the windowed RPI system in September screwed up the financial systems to the point that people there are calling me to ask how certain parts of it work (I worked on them from 1990-96). This is happening with a system which was fixed and implemented on time, yet it is still drawing resources away from the rest of the company, both from the RPI (Recreational Products Insurance) side and the financial side. It will result in incorrect data being reported to 50 Commissioners of Insurance in one week. They will have to clean the mess up later, and it will be an issue all through next year.

“This is a ‘cut’, a little annoyance which draws a little bit of resource away from a company, making it more difficult to get the work done. It is also an interface problem, since RPI is officially part of Zurich Personal Insurance, not UUG, so both ZPI and UUG have the problem. It will become Farmers Insurance’s problem soon, as RPI is moving to Farmers. One problem, but there will be three companies which must assign resources to it.

“This little cut is not, by itself, fatal, merely harmful. It draws 1 ½ programmers chasing bugs. It annoys the actuaries, ISO, and the states. It gives auditors fits. But it’s just one problem, the source of which has not been found after 3 months. Once the source is found, then they can begin fixing it, rerunning months’ worth of financial statements, ISO tape submissions, and reports to state auditors.”

Here we see a large scale industry main frame system that, even though “fixed,” still impacts those systems that integrate with this system and causes continued disruptions, although

<http://www.inpnet.org/html/nics.htm>

minor in nature. Even though they are minor, it is a source of inaccurate data and it dispensed inaccurate data to its integrated partners. Resources are consumed that are needed elsewhere to combat the Y2K problems. Multiply this and you begin to see the magnitude of even a relatively small problem.

We can deal with large scale reductions in productivity if we are talking about short term, stop gap measures, and for period of 2 to 4 weeks. With the amount of time we have to prepare, some industries could retool to old technology to temporarily replace downtimes in current systems while they are brought back on line or could build inventories to hold them over while they come back to speed. We could work with manual techniques to maintain some productivity in goods and services. Once we go beyond 4 weeks or so, it will become increasingly more difficult to replace current systems with older systems



Bear in mind what this means to our standard of living as we live it today. If we have system and service interruptions of a few weeks then we all just “hunker down” and absorb this short term disruption to our lives as if it were a blizzard or hurricane or other natural disaster. For these short term problems I believe we would be willing to accept almost anything to overcome the problem in as short a time as possible, up to and including nationalization of industries and mobilization of the National guard and armies and short term martial law. Once it gets past this short term period, we are in for significant changes to our life style. City dwellers could find themselves living for weeks or even months in public shelters. Suburbanites could find themselves living the life of their grandparents in terms of food, water, cleanliness, transportation, etc. All this will be sporadic, in scattered areas, depending on where supply shortages exist, which items are in short supply and how well you have completed your individual contingency planning. In the Caribbean, where hurricanes routinely change the way people exist, their answers to the question of what they do when such disruptions come about, simply shrug their shoulders, spread their arms out and say “We just go back to oil lamps, candles and barter.”

Yeah, we can do that. 

# Writing Effective E-mail

by DeniBerger

Using e-mail has become a necessity in today's society. Many people have an Internet connection that allows them to communicate through e-mail, while others have programs such as Juno, which only allow them to send and receive messages. Of course, this communication is much faster than writing a letter and

sending it "snail mail" or cheaper than making a long distance phone call. Because e-mail is made up of mostly text and you are not able to tell the tone of voice it was written, it can often be misunderstood. Here are a few tips that you might want to take into consideration when you write your next message.



## CAPS LOCK

FIRST OF ALL, WHEN WRITING YOUR E-MAIL DON'T YELL!!! (Get the point?)

Use letters that are both upper and lower case. Some people think using Caps Lock is the best way to communicate. That way they do not have to press the SHIFT key when writing. Unfortunately, people on the other end of the message may not know you are one of those people. As a result the message is often interpreted as raising your voice.

On the other hand, using only lower case is also a poor way to create an e-mail. It does not portray whispering, as all caps portrays shouting, but it does allow the reader to think you need to go back to grammar school. Professional writing, even in e-mail, should include both cases of characters.

## Spell Check

Sumtymz wee misspell werds. Ah, then there is the spell check. Most programs have them. In fact, many programs allow you to set your preferences to check your spelling before you send your message. It is rather embarrassing to send messages that have misspelled words in them. Especially when it is business e-mail. Family and friends are normally more forgiving in such cases, but business people turn their noses up at such messages. Always stop yourself before sending your messages. Look

over your content and double check your recipient list. Be careful and always use your spell check.

## Subjects

Have you ever received a message and left it in your Inbox for a while because it did not have a subject? What if that message told you that you needed to be at a meeting in 15 minutes to discuss a new business plan? By providing a subject the reader knows what the content of the message will be. Subjects are especially helpful for people who have filters to organize their mailbox.

## HTML

When e-mail was first invented, messages were merely plain text. Now that technology has advanced a little more and HTML has become more prevalent, e-mail programs allow us to create messages with backgrounds or stationery along with many other features. Assuming that everyone uses HTML is a mistake often made. You may want to add bold text to your message. That is great if your reader has an HTML reader. If they do not then their message will just be plain text anyway. There is a great web site that tests your e-mail program. It is <http://mcc.com/au/wow/HTMLmail.htm>. You can also send a blank message to [testhtml@wopr.com](mailto:testhtml@wopr.com) and they will send an HTML message back to you to test your system. Have you ever seen a message in a program that does not support HTML?

## Privacy

Don't ever assume that you are going to have privacy when sending e-mail. Chances are someone is looking at your message, especially, if you work in a big company. Many network administrators monitor the messages that come in. If you want privacy in your e-mail make sure you encrypt it. Because you will probably not have privacy, be careful sending passwords in your e-mail. If you need to give your administrator your password make sure you see them in person. This will ensure that no one else gets access to that password.

## Attachments

What if you receive a message that has an attachment in Microsoft Word and you do not have Microsoft Word, what happens then? You cannot read it. Your computer will prob-

ably give you a screen that asks you what you want to view the file in. Be considerate of other people and the programs that they use. Be careful not to assume that because you have the latest version of your word processor that everyone else does too.

Last week I made the mistake of sending a 7MB file to someone else in the office. We have a high-speed connection so when I sent it, it really didn't take long to leave my outbox. So what is the problem with sending such large files? Well, if he'd tried to download the message at home, it would've taken hours to download. Words to the wise - do not send large messages.

## Hoaxes

Many times people forward messages that tell you in 15 minutes your computer will shut down and be destroyed. There are many hoaxes that are passed around. If you are unsure about a particular e-mail be sure that you check the attachments with an anti-virus program. Web sites that you can check for common hoaxes include:

<http://www.datafellows.com/news/hoax>  
<http://www0.delphi.com/navnet/legends/legends.html>  
<http://www.kumite.com/myths>

These sites are very informative and have information on both virus, and anti-virus e-mails.

## Quick Response

One of my biggest pet peeves is to e-mail someone and not receive a response. It is very frustrating to wait for weeks on end just for a simple answer. Respond to e-mail in a timely manner even if you need to let them know you need more time. Sometimes you will receive e-mails that upset you. In those cases you might want to take a day or two to respond. Counting to ten doesn't always work to gain composure. Responding right away might cause you to say things that you don't really mean. Another idea is to write the message, print it out and wait a day. Then reread it. You might find that you want to edit it a bit and then send it.

When responding to your messages, quote the parts of the message that you are responding to. If you do not need to respond to a certain part of the message, leave that part out. Don't quote it if you do not have a response to follow. Be careful not to have three miles of text that follows your message. If you respond back and forth several times start cutting part of the text out.

## Conclusion

E-mail has become a great asset in today's society. We are able to communicate quicker without the cost unlike the past. Again, a few pointers to remember:

- Don't use CAPS LOCK
- Check your spelling
- Add a subject
- Make sure your recipients have a compatible program with yours
- Encrypt your messages if you want privacy
- Watch large file attachments
- Beware of hoaxes
- Respond quickly



I'm sure that there are many other pointers that we could find to help us. Here are a few that you can keep handy so that you can be more effective when writing your e-mail.

<http://www.inpnet.org/html/nics.htm>

# NICs

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## What Institute Members Are Saying

### Network Professional Technical Resource CD

I have already received first quarter's CD and it is great!! The user interface is fantastic, is easy to use and navigate. I am most pleased with this product. Even enjoy the Jazz intro. Keep up the good work.

*Ted Berry*  
*Ultimate Connections*

I found that getting the unlock key was very easy. The new format works well.

*Klaus W. Clippinger*  
*TRW, Inc*

I can't tell you how much I value the information and support that your organization has helped me since I became a member. I can only assume that it has to do with all the hard work and effort that you have put into the organization.

*Gene Schroer*  
*President, Runnymede, Inc*

Not only have I renewed but I have told everyone I know about your service. I am very happy to be a member.

*Dave Sims*  
*Meridan Mutual Ins. Co.*

Thanks for the Resource CD index. After receiving the 4th quarter CD I was thinking...that it would be a great benefit to be able to look up past resource information and programs. Thanks again, and I think the Resource CD's are well worth the membership cost.

*John Livres*  
*GE Capital- ITS*

### NICs—Network Professional Technical Journal

I have found this newsletter to be one of the most worthwhile publications I have seen in a long time. The articles are well balanced, in that they address the whole person. Soft skills are just as important as technical! I distribute copies to all of my staff and they also enjoy reading it. Thank you for doing such a great job with this!

*Louise Miller-Finn*  
*Network Manager-Johns Hopkins University*  
*School of Medicine-Basic Sciences*

I am in the process of getting certified in NT Workstation and Server. The article in your newsletter Exam Preps for NT Workstation is excellent. Thanks for the information. It will be invaluable to me in my preparation for the NT Server test.

*Edward Clark*  
*Atlantic Community College*

Just had to drop you this note to tell you how much I value my membership. Your Nics are proving themselves to be super handy. Keep up the great work.

*Robert Cover*  
*Helmsman Consulting*

Its nice to see a trade publication that focuses on the other aspects of our profession, not just the technical aspects.

I thoroughly enjoy the series on staff management and leadership. When I started working for Tri-County Mental Health, I was the sole IS guy. I designed, installed and managed the agencies entire computer network. That was four years ago. I now have a three staff and I expect to hire three more over the next couple of years.

Since then I have learned that managing equipment is easy, managing people is not. Your series is very helpful and offers insightful advice and ideas. As my role as a people manager expands, my new challenge now is to make sure my staff are equipped to do their job, are happy with their work and can grow within our team, and continue to provide a good service to our users. Your series helps me do just that. Keep up the good work, I look forward to the next issue.

*Tim McClure*  
*Tri-County Mental Health*

Thank you for news letters that I am receiving from you. I want to be member of the Institute and I will pay the subscription.

*Adriana Mihaila*  
*Omnilogic BGS, Bucharest, Romania*

### And Opps ...We Stand Corrected

Thank you for sending your NIC newsletters; they are well written, informative and to the point.

Deni Berger's article in your most recent NIC focuses on grammer techniques in professional writing. I was somewhat surprised to see that her use of the term "conjunction" is incorrect; the intended term is "contraction" when referring to making two words into one such as can't, won't, they're, etc.

One other minor point is the article by Robert J. Defendi in your previous NIC issue about reviewing a Proxy Server training video. On page 6, Mr. Defendi notes that he awaited the results of his test "with baited breath." The correct word here is bated which means to diminish or decrease. (Although the mental image of having bait on your breath is much more amusing!). Thanks again for an informative read.

*Kathie Herring*  
*National Board of Medical Examiners*

