



TotalNET Advanced Server 5.2 Reference Manual

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Introduction

This chapter covers the following topics:

- “TotalNET Advanced Server” on page 1
- “What’s New in This Release” on page 2
- “About This Manual” on page 3
- “Related Books” on page 6

TotalNET Advanced Server

TotalNET Advanced Server (TAS) provides a unified networking solution for multi-platform LAN and WAN environments. TAS enables LAN Manager, Windows NT, Windows 95, Windows for Workgroups, Windows 3.x, OS/2, NetWare, and AppleTalk clients to share file, print, and terminal services transparently across a UNIX server, regardless of their choice of client software and network protocol.

Because TAS software uses UNIX as the enterprise LAN server operating system, it can operate with other UNIX processes. This interoperability allows you—the administrator—to use UNIX’s multi-user scalability for application, file, printer, ATLW, terminal, NVT, mail, communications, and database services.

TAS includes three realms:

- LM-NT-OS/2 realm — The realm for LAN Manager, Windows NT, Windows 95, and IBM OS/2 clients running TCP/IP or NetBEUI transports.
- NetWare realm — The realm for NetWare clients running the IPX/SPX transport.
- AppleTalk realm — The realm for Macintosh clients running the AppleTalk transport.

What's New in This Release

TotalNET Administration Suite

TotalNET Administration Suite (TNAS) allows you to configure the TotalNET network through HTML menus and dialogue boxes, just as TotalAdmin did for TotalNET Advanced Server (TAS) in previous releases of TAS. TotalAdmin constitutes one sphere of TNAS.

New TotalAdmin

The presentation and arrangement of TotalAdmin menu items reflect the new, intuitive TNAS framework.

File Name Mapping

The way TAS handles filename case now defaults to case-preservation, in which TAS maps case to UNIX exactly as given by the client, instead of to lower-case.

Improved Utility Performance

The TotalNET remote utilities, such as the ru- and nc- utilities, now support long file names, the tnpasswd utility performs more efficiently, the "CAP to MAC" utility works with TAS 5.0 file formats, the atconvert utility allows you to convert from Helios to TAS, and NetWare client utilities function more intuitively.

Enhanced Tracing

You can now turn tracing on or off from all three realms and for all file services, and you can do so more easily than in previous releases.

AppleTalk Printer Access from All Realms

This feature allows you to print to AppleTalk printers through TAS. TAS extends outbound and inbound support to the PAP driver.

About This Manual

This manual provides information for setting up, configuring, and administering TAS from the UNIX command line after you install TAS using the instructions in the *TotalNET Advanced Server Release Notes*, which came with your packaging. It assumes you have both an advanced understanding of network administration and network administration privileges in the system.

After reading the rest of this introduction, perform initial setup as described in Chapter 2. From there, you may administer TAS as using UNIX commands described in Chapters 3 and 4.

This section covers the following topics:

- “Notational Conventions” on page 3
- “Command Entry Format” on page 4
- “Terminology” on page 4
- “Overview of Chapters” on page 5

Notational Conventions

This table describes textual notations you will encounter:

<code>courier</code>	A command, path, or part of a path.
<i>italic</i>	A variable. You must replace each occurrence of this text with a valid value for its variable. For the realm variable, use NB, NW, or AT.
lower-case	A command or file name that does not require upper-case.
UPPER-CASE	Characters you must supply in upper-case.
[]	Brackets around an optional part of the command line.
{ }	Braces around two or more options, separated by pipes (), from which you must choose.
	A pipe to separate choices enclosed in braces.

()	Parentheses to group the options they enclose.
...	An ellipsis to indicate that you may include as many specifications as you wish for the preceding option.

The following example demonstrates the use of courier, courier italic, brackets, braces, pipes, and ellipses:

■ `command [option]... {literal|variable}`

The following example illustrates the addition of the value of the browse-master attribute (`kipper`) to the file service `atmoe:file` in the AT realm:

```
tnservice -A -r AT -s atmoe:file -a browse-master=kipper
```

Command Entry Format

Lists of command entries in alphabetical order appear in Chapter 3 and Chapter 4. The command entries describe function, location, usage, examples, and attributes for every command. Each command entry has the command name as the title, followed by a description of its functionality and the following sections:

- Location — The path of the command's location.
- Usage — The format for UNIX command-line usage, including parameters and options.
- Options — Descriptions of command and attribute variables and designations.
- Attributes — Command attributes that add to or modify the functionality of the command. This section only appears if attributes exist.
- Notes — Important properties and special requirements for the command. This section only appears if these qualities exist.
- Examples — Examples of usage.

Terminology

\$TNHOME	The TotalNET home directory where TAS files and programs reside, located at <code>/var/opt/totalnet</code> .
attach points	Aliases for directory paths in a volume. Users see attach points as volumes and cannot move up directory trees past them.
realms	Domains in the TAS environment. TAS has the following three realms, based on the three types of clients and transport protocols:

	LM-NT-OS/2 realm — The realm for LAN Manager, Windows NT, Windows 95, and IBM OS/2 clients running NetBIOS-over-TCP/IP or NetBIOS-over-NetBEUI transports.
	NetWare realm — The realm for NetWare clients running the IPX/SPX transport.
	AppleTalk realm — The realm for Macintosh clients running the AppleTalk transport.
services	File, print, and terminal services in the TotalNET environment.
TNAS	TotalNET Administration Suite, a task-oriented graphic administration and configuration interface for TotalNET product administration, licensing, and system administration. TNAS includes the TotalAdmin sphere for administering TAS. For more information on TNAS, refer to <i>TAS Administration Manual</i> .
TotalNET system manager	The daemon that performs general management of the TotalNET system. For more information, refer to <i>TAS Administration Manual</i> .
transports	Low-level networking protocol suites defined at the system level and referenced from all realms. TAS provides services for each realm over the appropriate transport protocols: NetBIOS-over-TCP/IP, NetBIOS-over-NetBEUI, IPX/SPX, and AppleTalk.
volumes	Short names for UNIX directory paths made known to TAS and its clients. File services export volumes to clients. You must define a volume and its corresponding directory path to make it accessible to network clients. Include a reference to a volume for all the file services you wish to enable for client access.
zone	In the AppleTalk environment, a zone consists of a logical grouping of clients. It simplifies browsing the network for resources, such as servers and printers, in similar domains. In a DNS (Domain Name System) database, a zone consists of a subdirectory of the DNS database. It serves as a DNS name server. This may contain a single domain or several sub-domains. You can set up one or more name servers for each zone.
zone list	All of the zones associated with a particular network.

Overview of Chapters

You must complete Chapter 2 before you can perform any tasks in Part II: Administration.

Part I: Initial Setup

- Chapter 1 — This chapter. Descriptions of new features; the usage, terminology, and chapters of this guide; related books; and TotalNET Advanced Server.
- Chapter 2 — Step-by-step instructions for performing initial configuration of TAS from the UNIX command line.

Part II: Administration

- Chapter 3 — Descriptions of the commands available to all users, including general utilities, realm-specific utilities, shadow file utilities, and remote utilities for SMB and NetWare clients.
- Chapter 4 — Descriptions of the commands for general administration and configuration of TAS.
- Chapter 5 — Descriptions of the utilities for use with DOS VLM/NETX clients.
- Chapter 6 — Descriptions of NetWare login scripts for use with NetWare clients.
- Chapter 7 — Instructions for general troubleshooting, generating error and activity logs, identifying error messages and conditions and their solutions, generating Customer Service Request (CSR) report system information, and contacting Syntax Technical Support.

Related Books

TotalNET Advanced Server Release Notes — Instructions for installing TAS, included with your packaging. You must complete the appropriate steps in *TotalNET Advanced Server Release Notes* before using this *TAS Reference Manual* or *TAS Administration Manual*.

TAS Administration Manual — On-line instructions for performing administrative configuration of TAS from the TNAS interface.

TAS Quick Reference — A summary of UNIX commands, included with your packaging.

Initial Setup Steps

This chapter provides instructions for initial configuration of TAS from the UNIX command line. Configure TAS only after you complete all the appropriate installation steps in the *TotalNET Advanced Server Release Notes*. You must perform initial configuration immediately after TAS installation to complete all system-level configuration tasks.

1. Starting Initial Setup

Follow these steps to begin initial setup:

1. **Log in as `root` to the TAS host machine.**
2. **Change directory to the TotalNET home directory `$TNHOME/usr/sbin`. For the location of `TNHOME` on your platform, check the *Solaris Server Intranet Extension Installation Library*.**
3. **Enter the following command:**

```
./tnsetup
```

The following script appears:

```
TotalNet Advanced Server  
Press <Return> to continue. [OK]
```

4. Press Enter.

The following script appears:

```
This script has attempted to discover default values for all of the
parameters required for minimum configuration of TotalNET Advanced Server.
You may modify any of the values on the following screens. If any are
displayed as a series of dashes (-), you will need to change them.
Otherwise, you may accept the defaults and these values will be used
to configure transports, realms, services, volumes and printers for
TotalNET Advanced Server.
Press <Return> to continue [OK]
```

2. Entering the License Key and General TAS Settings

1. Press Enter.

The following options appear:

General Configuration

```
1. License Key          -----
2. TotalNET administrator      totalnet
3. TotalNET administrator's group  totalnet
4. Start configured services on reboot  yes
```

Type:

```
a          Accept all of the values as
           shown.

c [<n> <n> ...]  Change specified item <n>, or
                 all items.
```

h <n>	Help on item <n>.
r	Redraw menu
q	Quit without changing anything.

Option [r]

2. Enter `c 1`.

3. To use TAS in single-user mode, leave the license key field blank. To use TAS with multiple users, enter your TAS license key enclosed in quotes. Enter letters in the key in the case provided by your Syntax representative. Each time you start TAS and execute a server daemon, TAS verifies the identification number of its host server, checks the licensed user limit, and, if applicable, checks the expiration date of the license. Contact your Syntax sales representative to purchase additional licenses.

4. To accept the user `totalnet` and the group `totalnet` as defaults for the TAS administrator and start configured services on reboot, continue to Step 5.

To change the name or group of the administrator or to disable the option to start configured services on reboot, follow the appropriate instructions below. When you finish, press Enter and continue to Step 5.

- To change the name of the administrator: Enter `c 2` and type the administrator name you want.
- To change the group name of the administrator: Enter `c 3` and type the group name you want.
- To avoid starting your services when you complete configuration: Enter `c 4`, then enter `no`.

5. Enter `a` to accept the values shown.

The following script appears:

```
Checking user...
Press <Return> to continue. [OK]
```

6. Press Enter.

The following script appears:

```
Checking group...
Press <Return> to continue. [OK]
```

7. Press Enter.

The following script appears:

```
Checking license...
Press <Return> to continue. [OK]
```

8. Press Enter.

The following script appears:

```
Continue with these values? [yes]
```

9. Press Enter.

3. Configuring the LM-NT-OS/2 Realm

The options below appear. Options 4 and 5 do not appear if your system does not support NetBEUI.

```
LMserver Configuration
```

```
1. Enable LM-NT-OS/2           yes
2. LMserver server name       hostname
3. LMserver workgroup name    workgroup
4. Support for NetBEUI clients yes
5. Device for NetBEUI         /dev/iee:0
```

Type:

a	Accept all of the values as shown.
c [<n> <n> ...]	Change specified item <n> or all items.
h <n>	Help on item <n> .
r	Redraw menu
q	Quit without changing anything.

Option [r]

1. To enable the LM-NT-OS/2 realm and accept all default values for file service name, workgroup name, NetBEUI services, and the NetBEUI interface name, continue to Step 2.

To disable the LM-NT-OS/2 realm or change the file service name, workgroup name, NetBEUI services configuration, or NetBEUI interface name, follow the appropriate instructions below. When you finish, press Enter and continue to Step 2.

- To disable the LM-NT-OS/2 realm: Enter **c 1** and press Enter, then type no.
- To change the file service name: Enter **c 2** and press Enter, then type a service name with 15 or fewer characters and no spaces.
- To change the workgroup name: Enter **c 3** and press Enter, then type the name you want.
- To disable NetBEUI client support: Enter **c 4** and press Enter, then type no.
- To change the NetBEUI interface name: Enter **c 5** and press Enter, then type the name you want.

2. Enter a to accept the values shown.

The following options appear:

```
LMserver Configuration

1.Enable LM-NT-OS/2                yes

2.LMserver server name             hostname
```

3.LMserver workgroup name	workgroup
4.Support for NetBEUI clients	yes
5.Device for NetBEUI	/dev/iee:0
Continue with these values?	[yes]

3. Press Enter.

4. Configuring the NetWare Realm

The following options appear:

NWserver Configuration

1. Enable NetWare Compatibility	yes
2. NWserver name	nwhostname
Type:	
a	Accept all of the values as shown.
c [<n> <n> ...]	Change specified item <n>, or all items.
h <n>	Help on item <n>.
r	Redraw menu
q	Quit without changing anything.

- 1. To enable the NetWare realm and accept the default file service name, continue to Step 2.**

To disable the NetWare realm or change the file service name, follow the appropriate instructions below. When you finish, press Enter and continue to Step 2.

- To disable the NetWare realm: Enter `c 1` and press Enter, then type `no`.
- To change the file service name: Enter `c 2` and press Enter, then type a service name with 15 or fewer characters and no spaces.

2. Enter a to accept the values shown.

The following options appear:

```
NWserver Configuration

1. Enable NetWare Compatibility          yes

2. NWserver name                       nwhostname

Continue with these values?            [yes]
```

3. Press Enter.

The following script appears:

```
TNIPX Configuration
Configure network numbers and Ethernet/
Token Ring frame types as defined by Novell.
If there are other NetWare or NetWare servers on the network, this script
can detect the values used and auto-
configure all of the interfaces. This is the recommended method.
1. Have the script auto-configure network interfaces to support all auto-
discovered frame types and network numbers.
2. Have the script ask you to specify options for each interface.
Option: [1]
```

4. To have the script auto-configure frame types and network numbers for the tnipx transport interface, enter 1. The following script appears:

```
This option should be selected only if there are other NetWare servers
running on the network.
Do you want to continue with option 1? [y]
```

To have the script prompt you for `tnipx` transport interface options, enter 2.

5. Enter yes (y).

5. Configuring the AppleTalk Realm

The following options appear:

```
MACserver Configuration
```

```
1. Enable AppleTalk Compatibility    yes
2. MACserver name                   athostname
3. AppleTalk interface              /dev/le:0
```

```
Type:
```

```
a                                Accept all of the values as shown.
c [<n> <n> ...]                  Change specified item <n>, or all
                                items.
h <n>                            Help on item <n>.
r                                Redraw menu.
q                                Quit without changing anything.
```

```
Option [r]
```

1. To enable the AppleTalk realm and accept the default file service and interface names, continue to Step 2.

To disable the AppleTalk realm or change the file service or interface name, follow the appropriate instructions below. When you finish, press Enter and continue to Step 2.

- To disable the AppleTalk realm: Enter `c 1` and press Enter, then type `no`.

- To change the file service name: Enter `c 2` and press Enter, then type a service name with 15 or fewer characters and no spaces.
- To change the interface name: Enter `c 4` and press Enter, then type the name you want.

2. Enter a to accept the values shown.

The following options appear:

```
MACserver Configuration

1. Enable AppleTalk Compatibility          yes
2. MACserver name                        athostname
3. AppleTalk interface                   /dev/le:0

Continue with these values? [yes]
```

3. Press Enter.

The following script appears:

```
The Default AppleTalk Zone is a character string specifying the logical
network this system belongs to. You must provide a value for it.
Default AppleTalk Zone [default-zonename]
```

4. Enter your AppleTalk zone name and press Enter.

6. Loading the Drivers and Starting the Server

The following script appears:

```
Configure totalnet as the TotalNET Administrator
Enable server restart on reboot
Creating /etc/init.d/TAS
/etc/init.d/TAS created
Do NB realm setup
Adding driver tnnbu_nx...
Adding driver tnnbu_dg...
Adding driver tnnbu_ss...
Do NW realm setup
Adding driver tnipx_ex...
Adding driver tnipx...
Registering STREAMS modules tnspx and tnitp for autopush...
Do AT realm setup
Adding driver tnudp...
Adding driver tnatp...
Adding driver tnap...
Adding driver tnpap...
TAS setup completed.
```

You have successfully configured TAS!

For instructions on administering and configuring the server from the UNIX command line, use the commands described in Chapters 3 and 4.

TotalNET User Commands

This chapter lists TAS user commands, which reside in the `TNHOME/usr/bin` directory. The permissions of users, except for the superuser, determine the scope of modifications the users can make with these commands.

This chapter contains the following sections:

- “General Utilities” on page 17 — Commands for generating information about system components.
- “Realm-Specific Utilities” on page 39 — Commands specific to the LM-NT-OS/2, NetWare, and AppleTalk realms.
- “Shadow File Utilities” on page 73 — Commands for administering shadow files for name mapping.
- “Remote Utilities” on page 87 — Commands for administering remote system objects.

General Utilities

- “`tnct`” on page 18
- “`tncmnames`” on page 19
- “`tngettext`” on page 20
- “`tninfo`” on page 21
- “`tnld`” on page 23
- “`tnmsgfmt`” on page 28
- “`tnpasswd`” on page 30
- “`tnstat`” on page 34

- “tnwho” on page 37

tncct

This command allows you to manage client contexts for file services. It lists different types of client context files for given realms and services and returns the UNIX path names of given client contexts for specified users, services, and realms.

For each file service in a realm, each user may have files whose contents have meaning only for clients within the realm. These files must have appropriate names and contain information clients can accept. A user can access any number of client contexts for each service in each realm.

Location

TNHOME/usr/bin

Usage

```
tncct -r realm -s service [-c client-context -u user]
```

Options

-r <i>realm</i>	Specify a realm.
-s <i>service</i>	Specify a service.
-c <i>client-context</i>	Specify the client context file whose UNIX path name you want to list.
-u <i>user</i>	Specify the user whose client context file you want to list.

Examples

1. Use the following command to list the type of client context files in the NetWare realm for the file service myhost:

```
tncct -r NW -s myhost:file
```

2. Use the following command to list the UNIX path name of the client context file `corduroy` for the user `schwip` and the file service `myhost` in the AppleTalk realm:

```
tncct -r AT -s myhost:file -c corduroy -u schwip
```

tncmnames

This command displays a list of TotalNET character set map names.

Location

`TNHOME/usr/bin`

Usage

`tncmnames`

Example

Use the following command to display the list of TotalNET character set map names below:

```
tncmnames
```

Character Set Map Names

```
builtin-mac-roman  
builtin-codepage-437  
builtin-unicode  
builtin-iso-latin-1  
iso-greek  
codepage-850  
shift-jis  
euc-jp
```

tngettext

This command retrieves a translated text string corresponding to `msgid` from a message file generated using the `tnmsgfmt` command. The message file name comes from the `domain` argument, if present, or from the `TEXTDOMAIN` environment variable. The domain text names a domain, like the message file name without the `.mo` suffix. If you specify no domain or if no corresponding string exists, `tngettext` prints `msgid`.

This command looks for its message object in the directory `TNHOME/usr/lib/locale/msgs/lang`, where `TNHOME` represents the TotalNET home directory `/var/opt/totalnet`. The `lang` variable represents the locale name. The value of `lang` comes from the value of either the `LC_MESSAGES` or `LANG` environment variables, checked in that order; if neither of these variables exists, `tngettext` prints `msgid`. If one or both exist, `tngettext` appends the value of the `LC_CHARSET` environment variable to the path name. For example, message files for the `shift-jis` character set reside in `TNHOME/usr/lib/locale/msgs/lang/shift-jis`.

The `tngettext` command reads C escape sequences. Use `\t` for a tab and `\\` for a backslash. To set a message on a line of its own, either add `\n` at the end of `msgid` or use `tngettext` in conjunction with the UNIX `printf` command. For more information, refer to the UNIX `printf(1)` man page.

Location

`TNHOME/usr/bin`

Usage

`tngettext [domain] `msgid``

Options

<code>LANG</code>	Specify a local name.
<code>LC_MESSAGES</code>	Specify a messaging locale. If specified, this overrides <code>LANG</code> for messages.
<code>LC_CHARSET</code>	Specify a messaging character set. If specified, this selects a character set directory to search for the message object file.

TEXTDOMAIN	Specify the domain name of interest. The <code>tngettext</code> command uses <code>TEXTDOMAIN</code> only if you omit <code>tngettext</code> 's domain argument.
TEXTDOMAINDIR	Specify the path name to the message database. If present, this replaces <code>TNHOME/usr/lib/locale/msgs</code> .

tninfo

This command displays information about one or more TotalNET client connections, such as the connecting users, the times at which they initiate connections, and the network addresses from which they connect. By default, the report gives the following information about each client's connection: the user's UNIX name, the file service realm, the date and time of the connection, the number of transaction requests serviced, and the server's network name.

Location

`TNHOME/usr/bin`

Usage

```
tninfo [-r realm] [-t type] [-s service] [-f]
      [-u user|-c client]
```

Options

<code>-r <i>realm</i></code>	Specify a realm.
<code>-t <i>type</i></code>	Specify a service type.
<code>-s <i>service</i></code>	Specify a service.
<code>-f</code>	Receive comprehensive information, including the client computer's network name, the client's network address, the directories to which the client has attached and their corresponding volume names, the number of bytes read and written on each file and print service connection, and the number of open files.

<code>-u user</code>	Receive connection information on a user.
<code>-c client</code>	Receive connection information about a client computer. You can specify multiple options. The client variable represents the client's network name.

If you do not select a service, if no services match the conditions, or if the conditions contradict, such as in `-t file -s sparky:term`, an error message appears.

Examples

1. Use the following command to get basic information about all connected TAS clients:

```
tninfo
```

Sample Output:

User	Realm	Startup	Request	Server Name
spartacus	NB	Jan 19	10:390	lmspiffy:file
otto	NB	Jan 19	11:462	lmspock:file

2. Use the following command to get full information about user `sallie`:

```
tninfo -f -u sallie
```

Sample Output:

User	Realm	Startup	Request	Servename
larry	NB	Jan 19	10:390	lmspiffy:file

Client name
X(00000101:00aa006834ba:4003)

Network address
X(00000101:00aa006834ba:4003)

3. Use the following command to get information about the user kathy:

```
tninfo -u kathy
```

Sample Output:

User	Realm	Startup	Request	Server Name
kathy	NB	Jan 19	10:390	lmnew:file

tnld

This command displays the contents of the TAS file service lock file `{TNHOME}/tndb/=flock.file` in a readable format. Lock entries appear in any of three forms: “brief”, “long”, and “wide”. If entries appear, a single header line appears first, unless you use the `-h` option. In all of the forms, blank spaces separate the fields in the output lines. If you specify no options, `tnld` uses the “brief” form to display lock entries. The “brief” output format contains one line per lock entry. Each line contains the following fields:

<i>Inum</i>	The inode number, a decimal string.
<i>device</i>	A pair of decimal strings—major and minor device numbers—separated with a comma.
<i>lock state</i>	One of the following one- to four-character strings: C = DOS Compatibility DN = Deny None DNDR = Deny None and Deny Read DNDW = Deny None and Deny Write DR = Deny Read DRDW = Deny Read and Deny Write DW = Deny Write DA = Deny All
<i>number of clients</i>	A decimal string.
<i>filename</i>	A UNIX file name path. It appears when you specify the <i>-f</i> or <i>-s</i> options.

The following table shows an example of brief output format:

<i>Inum</i>	<i>device</i>	<i>lock state</i>	<i>number of clients</i>	<i>filename</i>
821	15,48	C	1	lions.doc
815	15,48	DW	2	tigers.doc
807	15,48	DRDW	2	bears.doc

Location

TNHOME/usr/bin

Usage

```
tnld [-h][-l] [-s] [-w] [-c client] [-f file]
      [-i inode-number] [-u username]
```

Options

-h	Suppress the header line.
-l	<p>Use the long output format. This format includes lock-entry lines followed by client-info lines. Lock-entry lines contain the following order of fields: inode number, device number, lock state, and, if specified, file name. Each field appears as described above in the <code>tnld</code> description. Lock-entry lines begin with up to seven blank spaces. Client-info lines give information about the file service clients that have the corresponding file open. Each client-info line contains four fields, in the following order: process-id number, user name, realm, and <i>service name</i>. When a lock entry contains a process-id number that does not match a current client object, the client-info line only contains the process-id number and the string (<code>no client</code>). Client-info lines begin with at least 27 blank spaces.</p> <p>process-id number — A decimal string.</p> <p>user name — A string with the special string (<code>anon</code>) for anonymous connections.</p> <p>realm — One of the following strings: NB, NW, or AT.</p> <p>service name — A string as it would appear in the output of <code>tninfo -f</code>.</p>
-s	Scan for file names. By default, lock information identifies locked files by device and inode numbers, except when the <code>-f</code> option selects the file. The <code>-s</code> option causes <code>tnld</code> to scan file service volumes so it can display the file names of locked files.
-w	Use the wide output format. This format follows the long output format, but it also includes the client name at the end of the client-info lines. The client name, a string, appears in the output of <code>tninfo -f</code> .
-c <i>client</i>	Select entries locked by a specific file service client. Give the client name as it appears in the output of <code>tninfo -f</code> .
-f <i>file</i>	Select entries for the specified file. For a non-directory file, <code>tnld</code> selects entries for that file. For a directory file, <code>tnld</code> selects entries for all files in the selected directory.
-i <i>inode-number</i>	Select entries for the specified inode number.
-u <i>username</i>	Select entries locked by the specified UNIX user.

Examples

1. Use the following command to display the inode number, device number, lock state, and number of clients:

```
tnld
```

Sample Output:

Inum	device	state	clients
229114	32,1	DN	1

2. Use one of the following commands to display the inode number, device number, lock state, number of clients, and file names:

```
tnld -f /home2/tmp/sh.date  
tnld -s
```

Sample Output:

Inum	device	state	clients
229144	102,7	DN	1

```
filename
```

```
/home2/tmp/sh.date
```

3. Use the following command to display contents of the file service lock file in long output format with lock-entry lines and without a file name:

```
tnld -l
```

Sample Output:

Inum	device	state	Pid	user
229144	102,7	DN	9365	totalnet

realm	service
NB	spiffy:file

4. Use the following command to display the file service lock file in long output format with lock-entry lines, and for a file name `readodd.notes` in the directory `/home2/tmp/`:

```
tnld -l -f /home2/tmp/readodd.notes
```

Sample Output:

Inum	device	state	filename
298503	32.1	DN	/home2/tmp/readodd.notes

Pid	user	realm	service
9365	totalnet	NB	spiffy:file

5. Use the following command to display the file service lock file in long output format with client-info lines for the file service client `marcie`:

```
tnld -l -c 'N(marcie<00>/1/0)1901' marcie
```

Sample Output:

Inum	device	state	Pid	user
229144	32,1	DN	9467	totalnet

realm	service
NB	plural:file

6. Use the following command to display the file service lock file in wide output format with client-info lines:

```
tnld -w
```

Sample Output:

Inum	device	state	Pid	user	realm
229144	32,1	DN	9467	totalnet	NB

service	client
plural:file	N(marcie<00>/1/0)1901

tnmsgfmt

This command creates message object files from portable object files—those with the `.xmsg` extension—without changing the portable object files. The `.xmsg` file contains messages displayed to users by system commands or application programs. You can edit these files and translate the messages to any language supported by the system.

All `.xmsg` files have the same format. Each file contains one or more lines, and each line contains either a comment or a statement. A comment begins with a hash mark (`#`) and ends with a new-line character. The `tnmsgfmt` command ignores all comments. Statements follow this format:

directive value

Each directive starts at the beginning of the line, and white space—either spaces or tab characters—separate it from *value*. The *value* variable consists of one or more quoted strings separated by white space. Use any of the following types of directives:

`domain` *domainname*
`msgid` *message_identifier*
`msgstr` *message_string*

The value of *domainname* should correspond to the message file name; if you edit messages for the `tnnlc_lowutils` domain, the directive should read `domain tnnlc_lowutils`, and the output goes into the message file `tnnlc_lowutils.mo`.

The `msgid` directive specifies the value of a message identifier associated with the directive that follows it. The `message_identifier` variable represents the target string to use at retrieval time. Follow each `msgid` directive statement with a `msgstr` directive statement. Do not change the `msgid` lines, since the code uses them as keys to locate the translated strings defined by the `msgstr` lines that immediately follow `msgid` lines. Message strings may contain the following escape sequences:

<code>\n</code>	new line
<code>\t</code>	tab
<code>\v</code>	vertical tab
<code>\b</code>	backspace
<code>\r</code>	carriage return
<code>\f</code>	form feed
<code>\\</code>	backslash
<code>\'</code>	double quotes
<code>\ddd</code>	octalbit pattern
<code>\xDD</code>	hexadecimal bit pattern

Location

`TNHOME/usr/bin`

Usage

```
tnmsgfmt [-v] filename.xmsg
```

Option

-v	List duplicate message identifiers in verbose format without re-defining message strings.
----	---

Notes

1. Install message object files in the directory

`TNHOME/usr/lib/locale/msgs/lang[/charset/]`, where **TNHOME** represents the TotalNET home directory `/var/opt/totalnet`. The **lang** variable represents the message language defined in `LC_MESSAGES` or in `LANG`, and **charset** represents the message character set defined in `LC_CHARSET`.

2. Messages can have any length; however, each line in the `.xmsg` file can have only `MAX_INPUT (512)` bytes. Installing message catalogs under the `C` locale serves no purpose, since the command ignores them for the sake of efficiency.

tnpasswd

This command creates, modifies, and deletes TAS users' passwords.

Location

`TNHOME/usr/bin`

Usage

```
tnpasswd [-u username] [-r realm...] [-s script...]  
tnpasswd -d username [-r realm...]
```

Usage for TAS-DCE

You must have the TAS-DCE package installed on your system to use this command:

```
tnpasswd [-u username] [-r realm...] [-s script...]  
        [-g DCE-adm-name] [-h DCE-adm-passwd]
```

Options

-u <i>username</i>	Specify the name of the user. The superuser may use this option to change any user's password.
-r <i>realm</i>	Specify the name of the realm.
-s <i>script</i>	Specify a startup program for when a Windows 95 client first logs on. This script must exist in a referenced volume or an attach point named netlogon in the LM-NT-OS/2 realm.
-d <i>username</i>	Specify the user name you want to delete or deny realm access.
-g <i>DCE-adm-name</i>	Specify the DCE privileged user's name. You must use this parameter when changing a DCE user's password using -r DCE.
-h <i>DCE-adm-passwd</i>	Specify the DCE privileged user's password. You must use this parameter when changing a DCE user's password using -r DCE.

Notes

1. Any TAS user can create a password, but only the superuser `root` can delete passwords. When the superuser deletes a user's password for a realm, the user does not have access to that realm. Only the superuser can reinstate a deleted password for a realm.
2. Users can create or modify their own passwords. If a user has different passwords for different realms, an error message appears when the user tries to change the password across all realms simultaneously.
3. When a user changes a password, the system prompts for the old password, the new password, and re-entry of the new password. The system does not prompt for the existing password when the superuser modifies or deletes the password of a TAS user.
4. You can configure a null password by entering a carriage return at the password prompt.
5. When you set the `client-encryption` attribute to `on`, only users who have entries in the TAS password file can access TAS realms. When you set `client-encryption` to `off`, only users who have entries in the UNIX password file can access TAS realms.

6. When you delete a TAS password, you do NOT delete the corresponding DCE and UNIX passwords.
7. In Distributed Computing Environment (DCE), TAS regards DCE as a TotalNET realm, along with NB, NW, AT, and UNIX. This provides a way of synchronizing the passwords of all realms, including DCE if it exists on the server. When changing a DCE user's password, you should use one password for all supported realms—NB, NW, AT, UNIX, and DCE. To change a DCE password entry, you must use `tnpasswd` to define `-r DCE`. Defining `-r DCE` only changes the DCE password. If you do not define the DCE realm, the TAS system changes the password for all realms except DCE. You cannot create or delete DCE user names and passwords with this command. Use the DCE administration interface to administer DCE passwords externally.

Examples

1. Use the following command to allow the superuser to create or modify the password of user `harold` for all supported realms:

```
tnpasswd -u harold
```

The following prompts appear:

```
New password:  
Re-enter new password:
```

2. Use the following command to create or modify the password of user `harold` for the LM-NT-OS/2 realm:

```
tnpasswd -u harold -r NB
```

The following prompts appear:

```
Changing password for harold  
New password:  
Re-enter new password:
```

3. Use the following command to delete the password of user `harold` and deny `harold` access from all three realms:

```
tnpasswd -d harold
```

4. Use the following command to delete the password of user `harold` from the NetWare realm:

```
tnpasswd -d harold -r NW
```

5. User `harold` can use the command below to change his password. He can use either the `-u` option or no options.

```
tnpasswd [-u harold]
```

The following prompts appear:

```
Changing password for harold
Old password:
New password:
Re-enter new password:
```

6. Use the following command to specify the logon script `win95.bat` for the user `harold` in the LM-NT-OS/2 realm:

```
tnpasswd -u harold -r NB -s win95.bat
```

7. Use the following command to change the password of DCE user `spiffy`:

```
tnpasswd -u spiffy -r DCE
```

The following prompts appear:

```
DCE privilege user account:
DCE privilege user password:
```

Log in as the DCE administrator. The following prompts appear:

```
Changing password for spiffy
Old password:
New password:
Re-enter new password:
```

tnstat

This command displays operational status information about all realms. The output includes status of the TAS system and services.

Location

TNHOME/usr/bin

Usage

tnstat [-r *realm*] [-t *type*] [-s *service*]

Options

-r <i>realm</i>	Specify the realm. If you do not specify a realm, the report contains the status of all realms.
-t <i>type</i>	Specify the service type.
-s <i>service</i>	Specify the service.

Examples

1. Use the following command to show basic TAS status information:

```
tnstat
```

Sample Output:

```
TotalNET system is enabled.
```

```
Transports: tcpip tnipx tnatk
```

```
NBservices are up.
```

```
Transports used: tcpip
```

```
sparky:file is accepting new connects.
```

0 client(s) connected.

NWservices are up.

Transports used: tnipx

nwsparky:file is accepting new connects.

2 client(s) connected.

ATservices are up.

Transports used: tnatk

atsparky:file is accepting new connects.

0 client(s) connected.

2. Use the following command to view the status of the NetWare realm:

```
tnstat -r NW
```

Sample Output:

TotalNET system is enabled.

Transports: tcpip tnipx tnatk

NWservices are up.

Transports used: tnipx

nwmartin:file is accepting new connects.

2 client(s) connected.

```
nwmartin:term is accepting new connects.
```

```
0 client(s) connected.
```

3. Use the following command to view the status of file services:

```
tnstat -t file
```

Sample Output:

```
TotalNET system is enabled.
```

```
Transports: tcpip tnipx tnatk
```

```
NBservices are up.
```

```
Transports used: tcpip
```

```
spatacux:file is accepting new  
connects.
```

```
0 client(s) connected.
```

```
NWservices are up.
```

```
Transports used: tnipx
```

```
nwspatacux:file is accepting new  
connects.
```

```
1 client(s) connected.
```

```
ATservices are up.
```

```
Transports used: tnatk
```



```
atspatacux:file is accepting new
connects.
```

```
0 client(s) connected.
```

4. Use the following command to view the status of the file service ran in the LM-NT-OS/2 realm:

```
tnstat -r NB -s ran:file
```

Sample Output:

```
TotalNET system is enabled.
```

```
Transports: tcpip
```

```
NBservices are up.
```

```
Transports used: tcpip
```

```
ran:file is accepting new connects.
```

```
0 client(s) connected.
```

tnwho

This command lists the users that have current connections to the LM-NT-OS/2, NetWare, or AppleTalk file or print services. The report resembles that of the UNIX `who` command and includes the following information:

- each user's UNIX name
- the file service realm
- the machine name of the client
- the date and time of connection started

The report normally shows only one connection per Ethernet address. A duplicate may appear if TAS does not recognize a connection as terminated. An “ungraceful” disconnection by the client, such as when the user turns off the PC or reboots without logging out, usually causes this.

Location

TNHOME/usr/bin

Usage

tnwho [-r *realm*][-t *type*][-s *service*]

Options

-r <i>realm</i>	Specify the realm.
-t <i>type</i>	Specify the service type.
-s <i>service</i>	Specify the service.

Examples

1. Use the following command to list users currently connected to TAS file services:

```
tnwho
```

Sample Output:

simon	NB	SIMONPC	Jan 14 09:55
peter	NB	PETERPC	Jan 15 10:23

2. Use the following command to list users currently connected to file services for the LM-NT-OS/2 realm:

```
tnwho -r NB
```

3. Use the following command to list users currently connected to the file service *spock* in the LM-NT-OS/2 realm:

Realm-Specific Utilities

With the TAS 5.0 release, shadow file utilities took over functions of several realm-specific commands. If you cannot complete an activity as expected with a realm-specific command, check “Shadow File Utilities” on page 73.

AppleTalk Realm:

- “acprint” on page 40
- “acslis” on page 41
- “aczonelist” on page 45
- “atattr” on page 46
- “atconvert” on page 47
- “ddpinfo” on page 50
- “desk” on page 55
- “m2u” on page 56
- “maccp” on page 57
- “macfsck” on page 59
- “macmd” on page 60
- “macmv” on page 61
- “macrd” on page 63
- “macrm” on page 64
- “pinfo” on page 65
- “u2m” on page 66

LM-NT-OS/2 Realm:

- “nbmessage” on page 67
- “nbq” on page 69

NetWare Realm:

- “nwmessage” on page 70
- “nwq” on page 72

acprint

This command sends a print job to a remote AppleTalk realm printer, provided the system contains an active AppleTalk transport, the AppleTalk realm has started, and the remote printer supports the file's format. For example, you must print PostScript files to PostScript printers.

Location

TNHOME/usr/bin

Usage

To print a file to an AppleTalk realm printer with the given name:

```
acprint [-b] [-d] [-o] [-t] printername [file...]
```

To display the printer's PAP status string:

```
acprint -s printername
```

Options

-b	Remain attached to the terminal until the job reaches the front of the printer's queue and the printer accepts all data. This option also reads the standard input in an “unbuffered mode” to allow <code>acprint</code> to work interactively. If you do not specify this option, the print job occurs in the background.
-d	Delete the files after they print.
-o	Write output data from the printer to the standard output.
-t	Turn off the default printer output translation. When it displays printer output, <code>acprint</code> normally translates end-of-line markers CR and CR-LF to the UNIX convention LF.

<code>-s</code>	Acquire and display the printer's PAP status string.
<i>printername</i>	Specify the name of the printer to receive the print job. Enter the printer name in the form <code>name:type</code> or <code>name:type@zone</code> . If the zone does not exist or if you enter it as "*", this command uses the host server's local zone name. An AFP server has the type <code>AFPServer</code> . Print servers have the type <code>LaserWriter</code> .
<i>file</i>	Specify the file to print.

Examples

1. Use the following command to send the file `rain.doc` to the remote AppleTalk realm printer `atlwpr:LaserWriter@CINNEBAR` and turn off the default printer output translation:

```
acprint -t atlwpr:LaserWriter@CINNEBAR rain.doc
```

2. Use the following command to send the file `seattle.doc` to the printer `atlwpr:LaserWriter@CINNEBAR` and delete the file after it prints:

```
acprint -d atlwpr:LaserWriter@CINNEBAR seattle.doc
```

3. Use the following command to send the file `northwest.doc` to the printer `atlwpr:LaserWriter@CINNEBAR` and write the output data from the printer to the standard output:

```
acprint -o atlwpr:LaserWriter@CINNEBAR northwest.doc
```

acslis

This command lists active services in the AppleTalk realm.

Location

`TNHOME/usr/bin`

Usage

acslist [-m] [-s] [-q *queries*] [-w *wait-secs*] [*pattern*]

Options

-m	Show multiple replies.
-s	Show a single reply.
-q <i>queries</i>	Specify the number of lookup queries for acslist to send.
-w <i>wait-secs</i>	Specify the number of seconds to wait for replies to queries.
<i>pattern</i>	Specify a two- or three-part AppleTalk entity name, such as AFPServer for file services, or LaserWriter for printer services.

Example

1. Use the following command to list active services in the AppleTalk realm:

```
acslist
```

Sample Output:

A(61443.86.150)	newatkemppc:AFPServer@Cinnebar
A(61443.86.149)	atkemppcd:AFPServer@Cinnebar
A(61443.86.148)	atkemppc:AFPServer@Cinnebar
A(4100.246.128)	SPIRO:AFPServer@*
A(11268.159.128)	atNTPC:AFPServer@*
A(18948.244.128)	atscorpio:AFPServer@*
A(64771.133.128)	atjanepc:AFPServer@Cinnebar

A(12548.26.128)	atmikhailpc:AFPServer@CINNEBAR
A(772.64.130)	atspirogira:AFPServer@CINNEBAR

2. Use the command below to list active services in the AppleTalk zone Cinnebar. AppleTalk uses “=” as a wild card.

```
acslist '=:AFPServer@CINNEBAR'
```

Sample Output:

A(61443.86.150)	newatkemppc:AFPServer@Cinnebar
A(61443.86.149)	atkemppcd:AFPServer@Cinnebar
A(61443.86.148)	atkemppc:AFPServer@Cinnebar
A(4100.246.128)	SPIRO:AFPServer@*
A(11268.159.128)	atNTPC:AFPServer@*
A(18948.244.128)	atscorpio:AFPServer@*
A(64771.133.128)	atjanepc:AFPServer@Cinnebar
A(12548.26.128)	atmikhailpc:AFPServer@CINNEBAR
A(772.64.130)	atspirogira:AFPServer@CINNEBAR

3. Use the following command with the wild card “=” to list all AppleTalk services available in your local AppleTalk zone:

```
acslist =:=
```

Sample Output:

A(77767.2.997)	wallawalla:AFPServer@CINNEBAR
A(23238.1.132)	simile:AFPServer@CINNEBAR
A(99977.1.131)	datjunk:AFPServer@CINNEBAR
A(99977.1.130)	datjunkr:LaserWriter@CINNEBAR
A(99977.1.129)	junk:AFPServer@CINNEBAR
A(99977.1.128)	bomb:AFPServer@CINNEBAR
A(99977.45.128)	atsolx86:AFPServer@SYNTAX
A(2323.55.8)	lc580:SNMP Agent@*
A(2323.55.4)	lc580:Workstation@*
A(9876.55.252)	powermac:Power Macintosh@*
A(9876.55.4)	powermac:Workstation@*
A(6666.567.2)	quadra:ARA - Client-Only@*
A(6666.567.252)	quadra:Macintosh@*
A(6666.567.4)	quadra:Workstation@*
A(12345.1.251)	macbook:AFPServer@*
A(12345.1.252)	macbook:PPCToolBox@*
A(12345.1.253)	macbook:PowerBook 150@*
A(12345.6.4)	macbook:Workstation@*
A(12345.6.8)	NW410:SNMP Agent@*

aczonelist

This command displays a list of all zones in the AppleTalk network.

Location

TNHOME/usr/bin

Usage

aczonelist [-l]

Option

-l	Display the local zone.
----	-------------------------

Examples

1. Use the following command to display a list of all zones in the AppleTalk network:

```
aczonelist
```

Sample Output:

```
CINNEBAR  
LTA 00000000  
LTB 00000000  
P2Ether1 A5178101
```

2. Use the following command to display the local zone:

```
aczonelist -l
```

Sample Output:

```
Cinnebar
```

atattr

This command sets or modifies Macintosh file attributes.

Location

TNHOME/usr/bin

Usage

atattr [-C] [-V] [-v] [-u] [{+|-}bcdimrsw] *filename...*

Options

-C	Display the program copyright message and execute the command.
-V	Display the program version number and execute the command.
-v	Execute the command in verbose form, listing files or directories affected.
-u	Display the program usage message only.
+bcdimrsw	Add one or more of the attributes below.
-bcdimrsw	Delete one or more of the attributes below.

<p>(Attributes)</p> <p>Although this command accepts requests for adding and deleting these attributes, it only manipulates the <code>c</code>, <code>i</code>, and <code>s</code> attributes. TAS AppleTalk file services treat the other attributes as “read-only”.</p>	<p><code>b</code> — Backup Required</p> <p><code>c</code> — Copy Protect</p> <p><code>d</code> — Delete Inhibit</p> <p><code>i</code> — Invisible</p> <p><code>m</code> — Multi-User</p> <p><code>r</code> — Rename Inhibit</p> <p><code>s</code> — System</p> <p><code>w</code> — Write Inhibit</p>
<p><i>filename</i></p>	<p>The full or relative path to the file whose attributes you want to change. You can name multiple files on the same command line. Separate them with spaces.</p>

Example

Use the following command to add the Invisible and Write Inhibit attributes to the files `private` and `notes` in the current directory, display the program version number, and execute in written form:

```
atattr -Vv +iw private notes
```

atconvert

This command converts the finder information `.finderinfo` and resource fork `.resource` formats of pre-TAS 5.0 versions of the AppleTalk realm file format, CAP 6.0, or Helios EtherShare into the TAS 5.2 shadow file structure. The default, if you select no option, converts Macintosh files in pre-TAS 5.0 format to TAS 5.2 format. The `atconvert` command converts Macintosh files recursively, descending through directory arguments.

CAP 6.0 stores the finder information and resource fork in the `.finderinfo` and `.resource` directories, respectively. The `atconvert` command converts the information from the `.finderinfo` and `.resource` directories into the new structure and stores it in new shadow files. The command then deletes the `.finderinfo` and `.resource` directories.

Helios EtherShare stores the finder information and resource fork in a single file directory under `.rsrc`. The `atconvert` command converts this information from `.rsrc` into the new structure and stores it in new shadow files.

The `atconvert` command uses character set mapping when converting files between Macintosh and TAS. With TAS installed, the server reads the host character set value from the TAS configuration file. The client character set defaults to `builtin-mac-roman`. The host character set defaults to `builtin-iso-latin-1`.

Location

`TNHOME/usr/bin`

Usage

```
atconvert [-b] [-c] [-C charset] [-d] [-H] [-k]
          directory...
```

Options

<code>-b</code>	Convert Macintosh files in TAS 5.2 format to CAP 6.0 format. The <code>-H</code> option overrides this option.
<code>-c</code>	Convert from CAP 6.0 format to TAS 5.2 format. The <code>-H</code> option overrides this option.
<code>-C <i>charset</i></code>	Specify the client character set. If you do not specify this option, the character set defaults to <code>builtin-mac-roman</code> . Valid character sets include: <code>builtin-mac-roman</code> <code>builtin-iso-latin-1</code> <code>builtin-unicode</code> <code>builtin-codepage-437</code> You can use additional character sets if you install TAS.
<code>-d</code>	Convert Macintosh files with CAP binary compiled and <code>USE_MAC_DATES</code> defined to TAS 5.2 format. The <code>-H</code> option overrides this option.
<code>-H</code>	Convert Macintosh files in Helios format to TAS 5.2 format. This option overrides the <code>-b</code> , <code>-c</code> , and <code>-d</code> options.

<code>-k</code>	Keep the source finder information and resource fork. If you do not specify this option, <code>atconvert</code> deletes the original finder information and the resource fork after completing the conversion. In pre-TAS 5.0 format or CAP format, <code>atconvert</code> deletes all files in <code>.finderinfo</code> and <code>.resource</code> . In Helios format, it deletes all files in <code>.rsrc</code> .
<code>directory</code>	Specify the directories for file conversion.

Notes

1. **This command does not preserve the `comment` field in the finder information when converting from Helios format to TAS format.**
2. **This command uses the UNIX creation/modification date of the files in all conversions except when converting CAP format to TAS format with CAP binary compiled with `USE_MAC_DATES`.**
3. **The user who runs this command must have permission to read, write, and create all of the files under the directory.**
4. **This command preserves the original permission and ownership of the file. The shadow files and directories it creates have the same ownership and permission as the parent directory. Back up the directory if you want to preserve the original content.**
5. **Do not run the command from the root directory `/`.**

Examples

1. **Use the following command to convert the directory `/home/totalnet` and every subdirectory and file under it from pre-TAS 5.0 Macintosh file structure to TAS 5.2 structure and delete the original pre-TAS 5.0 finder information and resource fork:**

```
atconvert /home/totalnet
```

2. **Use the following command to convert CAP directory `/home/macdir` to a TAS directory, with `USE_MAC_DATES` defined when building CAP:**

```
atconvert -c -d /home/macdir
```

3. Use the following command to convert Helios directory `/home/heliodir` to a TAS directory:

```
atconvert -H /home/heliodir
```

ddpinfo

This command gives information about AppleTalk input and output packets and packet errors.

Location

`TNHOME/usr/bin`

Usage

```
ddpinfo [-i[x]] [-u[x]] [-r]
```

Options

-i	Provide the interface, a list of hardware and AppleTalk addresses, the number of input and output packets, and the number of packets that contained errors.
-x	Give a detailed breakage of errors.
-u	Provide user information broken down by protocol types, number of input and output packets, and number of packets containing errors. The protocol types include: RTMP Data and Response Name Binding Protocol AppleTalk Transaction Protocol AppleTalk Echo Protocol RTMP Requests Zone Information Protocol AppleTalk Data Stream Protocol
-r	Provide network number and port number, or route and router address, if applicable.

Examples

1. Use one of the following commands to acquire information about an AppleTalk interface:

```
ddpinfo  
ddpinfo -i
```

Sample Output:

```
Port 0:
```

```
name: 11c2:66
```

```
hw addr: 0800 6902 7a4e
```

```
appletalk addr: 1079/154 (0x437/0x9a)
```

```
ipkts/opkts 26579/2220, ierrs/oerrs 5/0
```

2. Use the following command to receive a detailed breakdown of errors:

```
ddpinfo -x
```

Sample Output:

```
Port 0:
```

```
name: 11c2:66
```

```
hw addr: 0800 6902 7a4e
```

```
appletalk addr: 1079/154 (0x437/0x9a)
```

```
ipkts/opkts 26579/2220, ierrs/oerrs 5/0
```

```
Error breakdown:
```

```
fragment: 0
```

```
short packet: 0
```

```
too many hops: 0
```

```
indirect broadcast: 0
```

```
unreachable network: 1
```

```
inactive protocol type: 4
```

```
user queue closed: 0
```

```
no memory on input: 0
```

```
badly formatted aarp packet: 0
```



```
badly formatted ddp packet: 0  
dropped due to full queue: 0  
dropped due to full interface: 0  
output data link: 0  
interface unlinked: 0  
no memory on output: 0  
no output ddp stream: 0  
no output aarp stream: 0
```

3. Use the following command to acquire user information:

```
ddpinfo -u
```

Sample Output:

```
Upper stream minor device 0:
```

```
Protocol type 6
```

```
ipkts/opkts 72/3, ierrs/oerrs 0/0
```

```
Upper stream minor device 1:
```

```
Protocol type 3
```

```
ipkts/opkts 0/0, ierrs/oerrs 0/0
```

```
Upper stream minor device 2:
```

```
Protocol type 1
```

```
ipkts/opkts 23817/0, ierrs/oerrs 0/0
```

Upper stream minor device 3:

Protocol type 2

ipkts/opkts 2769/2203, ierrs/oerrs 0/0

Upper stream minor device 4:

Protocol type 4

ipkts/opkts 0/0, ierrs/oerrs 0/0

Upper stream minor device 5:

Protocol type 0

ipkts/opkts 0/0, ierrs/oerrs 0/0

4. Use the following command to acquire the network number and port number, or the route and router address:

```
ddpinfo -r
```

Sample Output:

Router route table entry:

range 1-1 (0x1-0x1), port number 0

router address 1000/66

Router route table entry:

range 2-2 (0x2-0x2), port number 0

router address 1000/66

Router route table entry:

range 3-3 (0x3-0x3), port number 0

router address 1000/66

Router route table entry:

range 410-410 (0x19a-0x19a), port number 0

router address 1000/154

Local route table entry:

range 1000-1100 (0x3e8-0x44c), port number 0

desk

This command lists the information in a volume's desktop database.

Location

TNHOME/usr/bin

Usage

desk [-C][-u][-V][-{a|h|i}] *volume*

Options

-C	Display the program copyright message and execute the command.
-u	Display the program usage message only.
-V	Display the program version number and execute the command.

-a	Display the .Adesktop file.
-h	Display the header information.
-i	Display the .Idesktop file.
<i>volume</i>	Specify the relative or absolute path to the directory that serves as the root of the Macintosh volume whose desktop database you want to query.

Example

Use the following command to print the .Adesktop and .Idesktop files for the volume with root /usr/macvol:

```
desk -ai /usr/macvol
```

m2u

This command converts all Macintosh carriage returns to UNIX linefeeds.

Location

TNHOME/usr/bin

Usage

```
m2u [-C][-u][-V][-v] filename...
```

Options

-C	Display the program copyright message and execute the command.
-u	Display the program usage message only.
-V	Display the program version number and execute the command.

<code>-v</code>	Execute the command in verbose mode, listing all affected files or directories.
<i>filename</i>	Specify the relative or absolute path to the file requiring conversion.

Examples

1. Use the following command to convert the files `Fonts` and `Worklog` in the current directory:

```
m2u Fonts Worklog
```

2. Use the following command to convert all files ending in `.doc` in the directory `/usr/macvol/docs`, display the program version number, and execute in verbose mode:

```
m2u -Vv /usr/macvol/docs/*.doc
```

maccp

This command has the same behavior as the `tncp` command. It exists for backward compatibility only and may not appear in the next release of TAS. To copy files and directories, use the `tncp` command.

Location

`TNHOME/usr/bin`

Usage

```
maccp [-C] [-i] [-p] [-V] [-u] sourcefile targetfile
maccp [-C] [-i] [-p] [-V] [-u] sourcedir targetdir
maccp [-C] [-i] [-p] [-V] [-u] sourcefile targetdir
```

Options

-C	Display the program copyright message and execute the command.
-i	Prompt for confirmation before copying any files.
-P	Preserve file modification time stamps and permission modes.
-V	Display the program version number and execute the command.
-u	Display the program usage message only.
<i>sourcefile</i>	Specify the file from which to copy information.
<i>sourcedir</i>	Specify the directory from which to copy information.
<i>targetfile</i>	Specify the file to receive the copied information.
<i>targetdir</i>	Specify the directory receive the copied information.

Note

The information from source files and directories overwrites the target files and directories.

Examples

1. Use the following command to copy the file `textfile` to `datafile` in the current directory:

```
maccp textfile datafile
```

2. Use the following command to copy the directory `textfiles` in the home directory to `datafiles` in the `/home/macapps` directory:

```
maccp ~/textfiles /home/macapps/datafiles
```

3. Use the following command to copy the file `textfile` in the current directory and the contents of the directory `datafiles` in your home directory to the

`/usr/mac` directory, and to prompt for confirmation of overwrites and preserve file modification time stamps and permission modes:

```
maccp -ip textfile ~/datafiles /usr/mac
```

macfsck

This command performs a consistency check on a Macintosh volume, verifying that all files and directories in the volume have the appropriate shadow file entries.

Location

TNHOME/usr/bin

Usage

```
macfsck [-C] [-f] [-r] [-s] [-u] [-V] [-v] [-y] dirname...
```

Options

-C	Display the program copyright message and execute the command.
-f	Remove shadow file entries that do not have corresponding UNIX files.
-r	Perform a consistency check in all subdirectories in the volume.
-s	Execute the command without a screen display.
-u	Display the program usage message only.
-V	Display the program version number and execute the command.
-v	Execute the command in verbose mode, listing all affected files or directories.

<code>-y</code>	Answer “yes” to all confirmation prompts during the execution of this command.
<code>dirname</code>	Specify the relative or absolute path to the directory that serves as the root of the Macintosh volume that you want to check.

Note

The `macfsck` command’s behavior resembles that of the `tnvolck` command with the `-p` option. Running the `macfsck` command always preserves the file name. This command exists for backward compatibility only and may not appear in future releases of TAS. To perform the same function, use the `tnvolck` command.

Example

Use the following command to perform a consistency check on the subdirectory `mac` under the current directory with messages displayed as appropriate:

```
macfsck mac
```

macmd

This command behaves like the UNIX `mkdir` command. It exists for backward compatibility only and may not appear in future releases of TAS.

Location

`TNHOME/usr/bin`

Usage

```
macmd [-C] [-u] [-V] dir..
```


Options

-C	Display the program copyright message and execute the command.
-u	Display the program usage message only.
-V	Display the program version number and execute the command.
<i>dir</i>	Specify the full or relative path to the directory you want to create. You can specify multiple directories, separated by spaces.

Example

Use the following command to create the directory `macutils` in your home directory, and the directory `/usr/macapps/word`:

```
macmd ~/macutils /usr/macapps/word
```

macmv

This command, similar to the `tnmv` command, moves Macintosh files and directories and their shadow file information. This command exists for backward compatibility only. It may not appear in future releases of TAS. Use the `tnmv` command instead of this command for forward compatibility.

Location

`TNHOME/usr/bin`

Usage

```
macmv [-C] [-f] [-i] [-u] [-V] file1 file2  
macmv [-C] [-f] [-i] [-u] [-V] dir1 dir2  
macmv [-C] [-f] [-i] [-u] [-V] file1 dir2
```

Options

-C	Display the program copyright message and execute the command.
-f	Suppress messages about mode restrictions and error messages.
-i	Prompt for confirmation before overwriting files or directories.
-u	Display the program usage message only.
-v	Display the program version number and execute the command.
<i>file1</i>	Specify a source file to move to a destination file.
<i>file2</i>	Specify a destination file or new file name to which the source file can move.
<i>dir1</i>	Specify a source directory to move to a destination directory.
<i>dir2</i>	Specify a destination directory or new directory name to which the source directory can move.
<i>file</i>	Specify a source file to move to a destination directory.

Examples

1. Use the following command to rename the file `textfile`, in the local directory, to `datafile`:

```
macmv textfile datafile
```

2. Use the following command to rename the directory `textfiles` in your home directory to `datafiles` and move it to the `/home/macapps` directory:

```
macmv ~/textfiles /home/macapps/datafiles
```

3. Use the following command to move the file `textfile` in the current directory and the contents of the directory `datafiles` in your home directory to the directory `/usr/mac` and prompt for confirmation:

```
macmv -i textfile ~/datafiles /usr/mac
```

macrd

This command, similar to the `tnrm` command, removes a Macintosh directory and its shadow file subdirectories. You can remove multiple directories with one command line; separate them with spaces

This command exists for backward compatibility only; future releases of TAS may not support it. Use the `tnrm` command instead of this command for forward compatibility.

Location

`TNHOME/usr/bin`

Usage

```
macrd [-C] [-u] [-V] dir..
```

Options

<code>-C</code>	Display the program copyright message and execute the command.
<code>-u</code>	Display the program usage message only.
<code>-V</code>	Display the program version number and execute the command.
<i>dir</i>	Specify the relative or absolute path to the directory.

Example

Use the following command to remove the directory `/usr/macapps/word` and the directory `macutils` from your home directory:

```
macrd ~/macutils /usr/macapps/word
```

macrm

This command, similar to the `tnrm` command, removes Macintosh files and directories and their corresponding shadow file entries.

This command exists for backward compatibility only and may not appear in future releases of TAS. Use the `tnrm` command instead for forward compatibility.

Location

`TNHOME/usr/bin`

Usage

`macrm [-C] [-f] [-i] [-r] [-V] [-u] {file|dir}...`

Options

<code>-C</code>	Display the program copyright message and execute the command.
<code>-f</code>	Suppress error messages and messages about mode restrictions.
<code>-i</code>	Prompt for confirmation before overwriting files.
<code>-r</code>	Remove all files in all directories and subdirectories.
<code>-V</code>	Display the program version number and execute the command.
<code>-u</code>	Display the program usage message only.
<i>file</i>	Specify the file.
<i>dir</i>	Specify the directory.

Examples

1. Use the following command to remove the file `letter` from the home directory:

```
macrm ~/letter
```

2. Use the following command to remove all files ending in `.tmp` from the current directory and prompt for confirmation:

```
macrm -i *.tmp
```

3. Use the following command to recursively remove all subdirectories and files of `/tmp/temp`:

```
macrm -r /tmp/temp
```

pfindo

This command acquires the finder information for a file.

Location

TNHOME/usr/bin

Usage

```
pfindo [-C] [-V] [-u] [-m atmap] file...
```

Options

-C	Display the program copyright message and execute the command.
-V	Display the program version number and execute the command.
-u	Display the program usage message only.

<code>-m atmap</code>	Specify the AppleTalk map for which to get finder information. To define AppleTalk maps and suffixes, refer to the <code>tnatalk</code> and <code>tnsuffix</code> man pages.
<code>file</code>	Specify the relative or absolute path to the file for which you want the finder information. You can request finder information for multiple files, separated by spaces.

Examples

1. Use the following command to acquire the finder information for the file Unknown in the current directory:

```
pfindo Unknown
```

2. Use the following command to acquire the finder information for the file Unknown in the current directory, using the AppleTalk map `defatmap`:

```
pfindo -m defatmap Unknown
```

u2m

This command converts UNIX linefeeds to Macintosh carriage returns. You can name multiple files in one command, separate them with spaces.

Location

`TNHOME/usr/bin`

Usage

```
u2m [-C] [-u] [-V] [-v] filename...
```

Options

-C	Display the program copyright message and execute the command.
-u	Display the program usage message only.
-V	Display the program version number and execute the command.
-v	Write out the command as it executes, listing all affected files and directories.
<i>filename</i>	Specify the relative or absolute path to the file.

Examples

1. Use the following command to convert the files `Fonts` and `Worklog` in the current directory:

```
u2m Fonts Worklog
```

2. Use the following command to convert all files ending in `.doc` in the directory `/usr/macvol/docs`, display the program version number, and execute in verbose mode:

```
u2m -Vv /usr/macvol/docs/*.doc
```

nbmessage

This command sends messages to NetBIOS file service clients. You may specify any number of service names, user names, or clients, up to the maximum length of the command line, preceding each with the corresponding option. This specification defaults to all connected NetBIOS file service clients.

You can use any text for a message, but if it includes any of the following characters, enclose it in quotes to keep the UNIX shell from evaluating the message and protect embedded quotes:

```
# $ & * { \ ' ` \ ? | ^ !
```

If the message text includes dollar signs (\$) or back quotes (`), enclose them in apostrophes (').

Location

TNHOME/usr/bin

Usage

```
nbmessage [-u username] [-c clientname] [-s service] [-n NetBIOS_client...] message
```

Options

(no options)	Send a message to all connected clients.
-u <i>username</i>	Send a message to a specific user.
-c <i>clientname</i>	Send a message to a specific client, whose name you can learn with <code>tninfo -f</code> .
-s <i>service</i>	Send a message to all clients connected to a specific service.
-n <i>NetBIOS_client</i>	Send a message to a specific NetBIOS client.
<i>message</i>	Enter the message text to send to clients.

Examples

1. Use the following command to send the message “Roger will back up the server tonight” to all connected clients:

```
nbmessage ``Roger will back up the server tonight``
```

2. Use the following command to send the message “You look smashing” to user smitten:

```
nbmessage -u smitten ``You look smashing``
```

3. Use the following command to send the message “Who are you?” to the client N(ickky<00>/2/0)3:

```
nbmessage -c ``N(ickky<00>/2/0)3`` ``Who are you?``
```


4. Use the following command to send the message “The server will shut down in 5 minutes!” to all clients connected to the file service `nbmauve`:

```
nbmessage -s nbmauve:file ``The server will shut down
in 5 minutes!``
```

5. Use the following command to send the message “Who are you?” to NetBIOS client `NTPC`:

```
nbmessage -n NTPC ``Who are you?``
```

nbq

This command displays the network print jobs handled by the TAS `NBprint` process for NetBIOS clients. When you enter this command, the following information displays for each print job:

- the UNIX name of the client user
- the NetBIOS name of the client
- the size, in bytes, of the print job
- the date and time of the print job
- the full path name of the temporary spool file

You cannot use this command to pause, resume, or delete print jobs. You can delete a print job by deleting its temporary spool file or by using the UNIX `cancel` or `lprm` command (see the UNIX man pages for those commands).

Location

`TNHOME/usr/bin`

Usage

`nbq [queuename...]`

Option

queuename	Specify a TAS printer name, as defined by the <code>tnprinter</code> command. This command defaults to all print queues in use.
-----------	---

Examples

1. Use the following command to display all NetBIOS print queues:

```
nbq
```

2. Use the following command to display the printers `laser` and `dotty`:

```
nbq laser dotty
```

nwmessage

This command sends brief messages to NetWare file service clients.

Location

`TNHOME/usr/bin`

Usage

```
nwmessage [-u user] [-c client] [-s service] message
```

Options

<code>-u user</code>	Specify the UNIX user name of a connected TAS user.
<code>-c client</code>	Specify the machine name of a connected client. Since NetWare machines have no names, use the exact client name that the <code>tninfo -f</code> command reports.
<code>-s service</code>	Specify the name of a NetWare file service. Use this option to send message to all clients connected to a service.
message	Specify the message text to send to clients. It can contain no more than 55 characters—a NetWare restriction. Enclose your message in quotes if it includes any of the following characters: # \$ & * [\ ' ' ' ? ^ !

Examples

1. Use the following command to send the message “I will back up the server tonight.” to all connected clients:

```
nwmessage ``I will back up the server tonight.``
```

2. Use the following command to send the message “Hello.” to the user spartacus:

```
nwmessage -u spartacus Hello.
```

3. Use the following command to send the message “Who are you?” to the client X(00000100:00aa001a940b):

```
nwmessage -c ``x(00000100:00aa001a940b)`` ``Who are you?``
```

Use the following command to send the message “I will shut down the server in 5 minutes!” to all clients connected to the file service `nwpinial`:

```
nwmessage -s nwpinial:file ``I will shut down the server in 5 minutes!``
```

nwq

This command displays the print jobs handled by the NWprint process for NetWare clients.

Location

TNHOME/usr/bin

Usage

nwq [*queue...*]

Notes

1. **When you enter an `nwq` command, the following information appears for each print job:**
 - the UNIX name of the client user
 - the size, in bytes, of the print job
 - the date and time of the print job
 - the name of the temporary spool file
2. **You cannot use `nwq` to pause, resume, or delete print jobs. You can delete a print job by deleting its temporary spool file or by using the UNIX `cancel` or `lprm` commands (see the UNIX man pages for those commands).**

Examples

1. **Use the following command to display all NetWare print queues:**

```
nwq
```

2. **Use the following command to view the print queues of the printer names `laser` and `dotty`:**

```
nwq laser dotty
```

Shadow File Utilities

Shadow file utilities mimic the functionality of standard UNIX commands while maintaining the integrity of the TAS shadow file system.

- “tnchgrp” on page 73
- “tnchmod” on page 75
- “tnchownd” on page 77
- “tncp” on page 78
- “tnkdirck” on page 80
- “tnmv” on page 82
- “tnrm” on page 83
- “tnvolck” on page 85

tnchgrp

This command sets the group ID of a file or a directory to a specified group and changes the TAS shadow file group ID information to reflect the new ID. For more information, refer to the UNIX chgrp man page. Only the owner and the superuser may change the group of a file or a directory, and the owner can only change the group to a group in which owner belongs.

Location

TNHOME/usr/bin

Usage

```
tnchgrp [-f] [-i] [-R] group {file...|dir...}
```

Options

<code>-f</code>	Prevent this command from printing error messages even when the operation fails to change the group.
<code>-i</code>	Prompt for confirmation before changing the group for a file or directory.
<code>-R</code>	Change the group of a directory and every file and directory under that directory to the specified group, and change the shadow file information on each affected file and directory.
<i>group</i>	Specify a group name from the group database, or a numeric group ID, to give each file named by a file operand. If a numeric group operand exists as a group name in the group database, this command uses the group ID number associated with that name as the group ID.
<i>file</i>	Specify the path name of the file whose group ID you want to modify.
<i>dir</i>	Specify the path name of the directory whose group ID you want to modify.

Examples

1. Use the following command to change the group of the file `word.doc` to the group `tech`:

```
tnchgrp tech word.doc
```

2. Use the following command to change the group of the files `template.doc` and `diction.doc`, and the directory `publish`, to the group ID `269`:

```
tnchgrp 269 template.doc diction.doc publish
```

3. Use the following command to change the group of the file `sample.ppt` to the group `marketing` without receiving any error messages even if the command fails:

```
tnchgrp -f marketing sample.ppt
```

4. Use the following command to change the group of the file `logo.gif` to the group `marketing` and prompt for confirmation:

```
tnchgrp -i marketing logo.gif
```

5. Use the following command to change the group of the directory `FrameMaker` and all files and directories under it to the group `document`:

```
tnchgrp -R document FrameMaker
```

tnchmod

This command allows you to change or assign the mode of a file or a directory in a manner similar to that of the UNIX `chmod` command, as well as change the mode of the corresponding TAS shadow file for the specified file or directory. For more information, refer to the `chmod` man page.

Location

`TNHOME/usr/bin`

Usage

```
tnchmod [-f] [-i] [-R] absolute-mode {file... | dir...}  
tnchmod [-f] [-i] [-R] symbolic-mode-list {file... | dir...}
```

Options

<code>-f</code>	Use this command without allowing it to print error messages, even when the operation fails to change the mode.
<code>-i</code>	Prompt for confirmation before the mode changes.
<code>-R</code>	Change the mode of a directory and all files or directories under that directory, and change the shadow file information for the files and directories.
<i>absolute-mode</i>	Specify a four-digit octal mode.
<i>file</i>	Specify a file.

<i>dir</i>	Specify a directory.
<i>symbolic-mode-list</i>	Specify a list of symbolic expressions in the following form, where who represents the characters u, g, o, and/or a; operator specifies the way you want permissions to change, with +, -, or =; and permissions represents any compatible combination of r, w, x, l, s, and t: [who] operator [permissions]

Examples

1. Use the following command to change the mode of the file `userlist.doc` to “read” and “write” permissions for the owner and “read-only” permissions for others:

```
tnchmod 644 userlist.doc
```

2. Use the following command to add “write” permissions for everyone to the files `present.doc` and `schedule.doc` and the directory `mgmt`:

```
tnchmod a+w present.doc schedule.doc mgmt
```

3. Use the following command to change the permission of the file `log.nw` to `777` without receiving any error messages:

```
tnchmod -f 777 log.nw
```

4. Use the following command to change the permission of the file `testplan.doc` to `777` and prompt for confirmation before the mode changes:

```
tnchmod -i 777 testplan.doc
```

5. Use the following command to change the mode of the directory `marketing`, and all files and directories under it, to “read” and “write” permissions for everyone:

```
tnchmod -R a+r+w marketing
```

tnchown

This command sets the user ID of a file or a directory to a specified owner and changes TAS shadow file user ID information of that file or directory to reflect the new ID. Only the owner of the file or directory and the superuser root may change the owner of a file or directory. You can specify the owner as either the user name or the user ID.

Location

TNHOME/usr/bin

Usage

```
tnchown [-f] [-i] [-R] owner {file...|dir...}
```

Options

-f	Use the command without allowing it to print error messages even if the operation fails to change the owner.
-i	Prompt for confirmation before the owner of a file or directory changes.
-R	Change the owner of a directory and all files and directories under that directory, and change the shadow file information on each affected file or directory.
owner	Specify the new owner.
file	Specify the file.
dir	Specify the directory.

Examples

1. Use the following command to change the owner of the file `tnarch.doc` to the user `jeremy`:

```
tnchown jeremy tnarch.doc
```

2. Use the following command to change the owner of the files `status.doc` and `schedule.doc` and the directory `engineer` to user ID 269:

```
tnchown 269 status.doc schedule.doc engineer
```

3. Use the following command to change the owner of `tadmin.jpeg` to user `matt` without getting an error message even if the command fails:

```
tnchown -f matt tadmin.jpeg
```

4. Use the following command to change the owner of `schedule.ppt` to user `jacque` and prompt for confirmation:

```
tnchown -i jacque schedule.ppt
```

5. Use the following command to change the owner of the directory `marketing` and all files and directories under it to user `diane`:

```
tnchown -R diane marketing
```

tncp

This command copies a source file or directory and its corresponding shadow file information to a destination file or directory. This command overwrites destination files that have the same name as the source file, unless you specify the `-i` option. The source and destination directories must have unique names. For more information, refer to the UNIX `cp` man page.

Location

`TNHOME/usr/bin`

Usage

```
tncp [-f] [-i] [-p] file1 file2  
tncp [-f] [-i] [-p] file... dir  
tncp [-f] [-i] [-p] [-R] dir1 dir2
```

Options

-f	Copy a file and its shadow file, attempt to remove and unlink the destination file, and proceed with the copying process. The removal and unlinking only happen if the destination file exists but has no "write" permission.
-i	Prompt for confirmation before overwriting an existing target file or directory.
-p	Copy a file and its shadow file to another file, while preserving the file attributes.
file1	Specify a source file to copy to a destination file.
file2	Specify a destination file or new file name to which the source file can copy.
file	Specify a source file to copy to a destination directory.
dir	Specify a destination directory or new directory name to which the source file can copy.
-R	Copy a directory and every file or directory under it, along with all associated shadow files, to another directory.
dir1	Specify a source directory to copy to a destination directory.
dir2	Specify a destination directory or new directory name to which the source directory can copy.

Examples

1. Use the following command to copy the file `report.doc` and rename it `schedule.doc`:

```
tncp report.doc schedule.doc
```

2. Use the following command to copy the files `chapter1.doc` and `chapter2.doc` to the directory `manuals`:

```
tncp chapter1.doc chapter2.doc manuals
```

3. Use the following command to copy the directory `bookfiles`, along with all files and directories under it, to the directory `manuals`:

```
tncp -R bookfiles manuals
```

4. Use the following command to copy `intro.doc` to `preface.doc` but attempt to unlink `preface.doc` first, if it exists and has the "write" permission off:

```
tncp -f intro.doc preface.doc
```

5. Use the following command to copy the file `agenda.ppt` to the existing file `report.ppt` and prompt for confirmation before overwriting `report.ppt`:

```
tncp -i agenda.ppt report.ppt
```

6. Use the following command to copy the file `logo.gif` to the file `graphic.gif`, along with attributes of `logo.gif`:

```
tncp -p logo.gif graphic.gif
```

7. Use the following command to copy all files under the directory `system`, and their associated shadow files, to the directory `etc`:

```
tncp -R system etc
```

tndirck

Do not use `tndirck` for synchronizing TAS shadows files; use “`tnvolck`” on page 85. The `tndirck` command exists for backward compatibility only and will not appear in TAS 5.3.

This command finds the TAS volumes in which the given directories reside. Each directory must reside in one TAS volume. This command passes the volumes as variables and invokes the `tnvolck` command. The `tnvolck` command then performs the actual checking and synchronization of TAS shadow files.

Location

`TNHOME/usr/bin`

Usage

`tndirck [-f] [-i] [-p] [-R] dir...`

Options

<code>-f</code>	Do not prompt for confirmation before converting file names, and assume an answer of yes to all questions asked by <code>tndirck</code> . By default, <code>tndirck</code> behaves as if you define the <code>-i</code> and <code>-R</code> options.
<code>-i</code>	Prompt for confirmation before each phase of the clean-up process.
<code>-p</code>	Suppress file-name conversion.
<code>-R</code>	Clean up shadow files in a specific directory and in every sub-directory under it. By default, <code>tndirck</code> behaves as if you define the <code>-i</code> and <code>-R</code> options.
<code><i>dir</i></code>	Specify a directory.

Examples

1. Use the following command to check and clean up shadow files in the directory `/usr/backup96`:

```
tndirck /usr/backup96
```

2. Use the following command to check and clean up the directory `/home/simon/testing` without prompting for user confirmation:

```
tndirck -f /home/simon/testing
```

3. Use the following command to check and clean up the directory `/usr/bin/andromedia` and suppress the file name conversion:

```
tndirck -p /usr/bin/andromedia
```

tnmv

This command moves a source file or a directory and its corresponding TAS shadow file information to a destination file or directory. For more information, refer to the UNIX `mv` man page.

Location

`TNHOME/usr/bin`

Usage

```
tnmv [-f] [-i] file1 file2
tnmv [-f] [-i] file... dir2
tnmv [-f] [-i] dir1 dir2
```

Options

(no options)	Behave as if you specified the <code>-f</code> option.
<code>-f</code>	Conduct a move without asking for confirmation even when overwriting an existing file or directory. If you specify both the <code>-f</code> and the <code>-i</code> options, the <code>-f</code> option overrides the <code>-i</code> option.
<code>-i</code>	Prompt for confirmation before overwriting an existing target file or directory. If you specify both the <code>-i</code> and the <code>-f</code> options, the <code>-f</code> option overrides the <code>-i</code> option.
<i>file1</i>	Specify a source file to move.
<i>file2</i>	Specify a destination file or new file name.
<i>file</i>	Specify a source file to move.
<i>dir2</i>	Specify a destination directory or new directory name to which the source file or directory can move.
<i>dir1</i>	Specify a source directory to move to a destination directory.

Note

This command does not support files moving across the mount point. In that case, use `tncp` and `tnrm` instead.

Examples

1. Use the following command to move the file `phone.doc` to the file `call.doc` without prompting for confirmation even if `call.doc` already exists:

```
tnmv -f phone.doc call.doc
```

2. Use the following command to move the file `intro.ppt` to the file `preface.ppt` and prompt for confirmation before overwriting:

```
tnmv -i intro.ppt preface.ppt
```

3. Use the following command to move the file `sample.html` to the file `main.html`:

```
tnmv sample.html main.html
```

4. Use the following command to move the files `project1.ps` and `project2.ps` to the directory `projects97`:

```
tnmv project1.ps project2.ps projects97
```

5. Use the following command to move the directory `documents` to the directory `worddocs`:

```
tnmv documents worddocs
```

tnrm

This command removes files or directories and their corresponding TAS shadow file entries. To use this command, you must have privileges to remove files and directories.

Location

TNHOME/usr/bin

Usage

To remove a file:

```
tnrm [-f] [-i] file
```

To remove a directory and everything under it:

```
tnrm [-f] [-i] -R dir
```

Options

-f	Remove a file or a directory and its corresponding shadow file without allowing it to print an error message or prompt for confirmation when it fails to remove the specified file or directory. If the file does not have the "write" permission, the system prompts for confirmation before removing the files and directories unless you specify the -f option. If you specify the -f option, you automatically confirm the file's removal, and the system permanently deletes the file without further confirmation.
-i	Remove a file or directory and its corresponding shadow file and prompt for confirmation before each removal. This option overrides the -f option
<i>file</i>	Specify the file to remove.
-R	Remove a directory or directories along with everything under them and their respective shadow files.
<i>dir...</i>	Specify the directory to remove.

Examples

1. Use the following command to remove the file `system.ini`:

```
tnrm system.ini
```

2. Use the following command to remove the directory `sales`, including all files and directories under `sales`:

```
tnrm -R sales
```


3. Use the following command to remove the files `term.doc` and `pccode.doc` without prompting for a confirmation message:

```
tnrm -f term.doc pccode.doc
```

4. Use the following command to remove the directory `saleorders`, including all files and directories under `saleorders`, and prompt for confirmation before deleting each file or directory:

```
tnrm -i -R saleorders
```

tnvolck

This command checks and synchronizes files and directories under TAS volumes for the integrity of their corresponding TAS shadow files. The `filename-case` attribute of the volume specifies the volume's naming convention. The command only needs to synchronize file names for volumes with the `filename-case` attribute set to `lower`. By default, if `tnvolck` needs to synchronize a file name, it prompts for user confirmation before converting the file name.

This command checks for TAS shadow files that no longer have their corresponding UNIX base files. This condition may occur if a user has removed or moved the UNIX files using UNIX commands such as `mv` or `rm`, instead of TAS commands `tnmv` or `tnrm`. This command removes these shadow files.

This command checks for TAS shadow files that have different owner, group and mode information from their corresponding UNIX base files. This condition may occur if a user has changed the ownership and mode of the UNIX files using UNIX commands such as `chown`, `chgrp` or `chmod`, instead of TAS commands `tnchown`, `tnchgrp` or `tnchmod`. The `tnvolck` command changes the information on the shadow files to match the information of their corresponding UNIX files.

The `tnvolck` command checks to see if the files' UNIX names follow their TAS volumes' naming conventions. If a file's name does not follow its volume's specified convention, `tnvolck` attempts to synchronize it.

Location

`TNHOME/usr/bin`

Usage

`tnvolck [-a] [-[y|n]] [-p] [volume[:file]]`

Options

<code>-a</code>	Run <code>tnvolck</code> on all TAS volumes, except volumes with substitutable paths.
<code>-y</code>	Assume a yes response to all questions asked by <code>tnvolck</code> without prompting for confirmation. Use this option when you want <code>tnvolck</code> to synchronize shadow files.
<code>-n</code>	Assume a no response to all questions asked by <code>tnvolck</code> without prompting for confirmation. If <code>tnvolck</code> finds inconsistencies, it prints error messages. Use this option when you want <code>tnvolck</code> to check the volume without actually synchronizing shadow files.
<code>-p</code>	Suppress file name conversion. If you specify this option, <code>tnvolck</code> preserves file names without prompting for confirmation. Before modifying a file name or deleting a shadow file, <code>tnvolck</code> prompts for confirmation.
<code>volume</code>	Specify a volume.
<code>file</code>	Specify a file name that contains a list of valid directory paths. Use this only if the volume has a substitutable path for its <code>path</code> attribute. For information on TAS-supported escape sequences for path substitution, refer to the “ <code>tnvolume</code> ” on page 221 command. The directory paths defined in this file substitute the volume’s <code>path</code> attribute. If <code>tnvolck</code> finds a volume with a substitutable path, but you specify no file, <code>tnvolck</code> prints a warning and skips that volume.

Examples

1. Use the following command to check and clean up shadow files in the volume `myvol`:

```
tnvolck myvol
```

2. Use the following command to check and clean up shadow files in the volume `mybin`, which has a substitutable path, and replace it with the path contained in the file `/tmp/mydoc.txt`:

```
tnvolck mybin:/tmp/mydoc.txt
```

The `/tmp/mydoc.txt` path, an ASCII file, contains a list of directory names. Each line should contain a directory path name. For example, the file might contain the following entries:

```
/home/simon  
/home/steven  
/home/emily
```

3. Use the following command to check and clean up all TAS volumes, as found in the TAS configuration file:

```
tnvolck -a
```

4. Use the following command to check and clean up the volume `saleorders` and assume a yes answer to all questions:

```
tnvolck -y saleorders
```

5. Use the following command to check the volume `singular` without performing directory synchronization or clean-up:

```
tnvolck -n singular
```

6. Use the following command to check and clean up the volume `spartacus` without converting file names:

```
tnvolck -p spartacus
```

Remote Utilities

Remote utilities allow the UNIX host to obtain printing, file manipulation, messaging, and system time services from remote LM-NT-OS/2 and NetWare servers. Remote utilities for LM-NT-OS/2 servers begin with `ru`; remote utilities for NetWare servers begin with `nc`.

Use of Wildcards

Several of remote utilities allow you to use wildcard designators for files, following normal UNIX conventions for wildcard interpretations. The command descriptions and examples in this chapter conform to Bourne shell conventions. When you use wildcards with other shells, you may need to make some changes to the example commands. For example, the C shell expands any wildcards on the command line before passing parameters to the program. This causes unexpected results with the remote utilities commands unless you “escape” the string containing the wildcard, so the shell does not expand it. Do this by using single quotation marks ('), double quotation marks (“”), or backslash characters (\). For example, in the Bourne shell, you can use the following command:

```
rudir -P //server1/root/*.*
```

To achieve the same result in the C shell, use one of the following commands:

```
rudir -P '//server1/root/*.*'
rudir -P `//server1/root/*.*'`
rudir -P //server1/root/\*.*
```

Remote LM-NT-OS/2 utilities

- “ruattr” on page 89
- “rucopy” on page 91
- “rudel” on page 94
- “rudir” on page 96
- “rumd” on page 98
- “rumessage” on page 100
- “ruprint” on page 101
- “rurd” on page 106
- “ruren” on page 107
- “rush” on page 109
- “ruslist” on page 115
- “runtime” on page 117

Remote NetWare utilities

- “ncget” on page 118
- “ncprint” on page 120
- “ncput” on page 121
- “ncslist” on page 124

- “nctime” on page 123

ruattr

This command, for use with LM-NT-OS/2 servers, allows you to view the current DOS attributes of a file. You can set or clear DOS attributes.

Location

TNHOME/usr/bin

Usage

```
ruattr [-u username] [{-p password|-P}] [-C charset]
      [{+{a|s|h|r}}] [-{a|s|h|r}] //servername/object/path
```

Options

-u <i>username</i>	Specify the name of the user for the remote server.
-p <i>password</i>	Specify <i>username</i> 's <i>password</i> on the command line. No subsequent password prompt appears.
-P	Prompt for <i>username</i> 's password. The password does not appear as you type it. This option proves especially useful if you want to include the command but not the password in a batch file.
-C <i>charset</i>	Specify the client character set. If not specified, the character set defaults to <code>builtin-codepage-437</code> . Examples of valid character sets include: <code>builtin-mac-roman</code> <code>builtin-iso-latin-1</code> <code>builtin-unicode</code> <code>builtin-codepage-437</code>
+	Set one or more of the attributes below.

-	Clear one or more of the attributes below.
(Attributes)	a — Archive attribute s — System attribute h — Hidden attribute r — Read-Only attribute
<i>servername</i>	Specify the name of the remote server.
<i>object</i>	Specify the name of a shared object on a remote LM-NT-OS/2 server.
<i>path</i>	Specify a full or relative directory and file on the remote server. The path specification permits the use of wildcards.

Notes

1. To use this command, you must first start the LM-NT-OS/2 realm.
2. If you include neither an option to set attributes nor an option to clear attributes, UNIX returns the current attributes of the file.
3. File attributes always appear after modification.

Examples

1. Use the following command to show the attributes of `net.exe` in the directory `split` of the shared object `client` on the server `country` and prompt for a password, as user `maple`:

```
ruattr -u maple -P //country/client/split/net.exe
```

2. Use the following command to modify the attributes of the file `private.txt` in the virtual root of the shared object `shared` on the server `demopc`, change it to a Read-Only, Hidden file, and clear the Archive bit, with password `myword`:

```
ruattr -p myword -a +rh //demopc/shared/private.txt
```

3. Use the following command to clear the hidden attributes of all files in the shared object `public` on the server `demopc`, prompt for a password, and use the character set "shift-jis", as user `Ajax`:

```
ruattr -u Ajax -P -C shift-jis -h //demopc/public/*.*
```

rucopy

This command copies files between TAS and an LM-NT-OS/2 server. The file name convention used when copying a file depends upon the protocol negotiated. If UNIX and the server negotiate LANMAN 2.0 or higher as the protocol, this command uses the long file name convention; otherwise, it uses the DOS 8.3 file name convention. Only the path specification permits wildcards. The system checks any file copied to a DOS server for compatibility with DOS file naming conventions. If the target file already exists, the system prompts the user to choose one from the options detailed under the Note below. This remote utility is for use only with LM-NT-OS/2-compatible servers.

Location

TNHOME/usr/bin

Usage

To copy local files to a remote server:

```
rucopy [-u username] [{-p password|-P}] [-v] [-c]
      [-C charset] [-f] localfile
      //servername/object/path
```

To copy remote files to a local computer:

```
rucopy [-u username] [{-p password|-P}] [-v] [-c]
      [-s] [-C charset] [-a{s|h}]
      //servername/object/path/localpath
```

Options

<code>-u <i>username</i></code>	Specify the name of the user for the remote server.
<code>-p <i>password</i></code>	Specify <i>username</i> 's <i>password</i> on the command line. No subsequent password prompt appears.
<code>-P</code>	Prompt for <i>username</i> 's <i>password</i> . The password does not appear as you type it. This option proves especially useful if you want to include the command but not the password in a batch file.
<code>-v</code>	Give verbose output while copying files.
<code>-c</code>	Convert text files from DOS to UNIX format if copying from a remote server and from UNIX to DOS format if copying to a remote server.
<code>-C <i>charset</i></code>	Specify the client character set. If not specified, the character set defaults to <code>builtin-codepage-437</code> . Valid character sets include: <code>builtin-mac-roman</code> <code>builtin-iso-latin-1</code> <code>builtin-unicode</code> <code>builtin-codepage-437</code> You can use additional character sets if you install TAS.
<code>-f</code>	Always overwrite existing target files.
<code><i>local_file</i></code>	Specify the local path to the source file. You may repeat this option to copy multiple files.
<code><i>server</i></code>	Specify the name of the remote server.
<code><i>object</i></code>	Specify the name of a shared object on a remote LM-NT-OS/2 server.
<code><i>path</i></code>	Specify a full or relative directory and file path on the remote server. If not specified, path defaults to the current directory.
<code>-s</code>	Display files on the local monitor, instead of copying them.

-a	Include files of one or both of the following types: s — System files h — Hidden files
<i>local_path</i>	Specify the path to the target local directory.

Note - If a target file already exists, the system prompts the user to choose one of the following options:

O	Overwrite. The system overwrites the existing target file.
N	New file name. The system prompts the user for a new name for the target file.
C	Continue. The system continues without copying the file.
A	All. The system overwrites the current target file and all subsequent existing target files included in this copy operation. This command does not prompt the user to select from these options with subsequent existing target files.

Examples

1. Use the following command to copy all files with extension `.c` to the sub-directory `apps` of the object `root` on the server `aspen`, display names of files as they copy, and prompt for a password, as user `Andrew`:

```
rucopy -u Andrew -P -v *.c //aspen/root/apps
```

2. Use the following command to copy files whose names end in `.txt` in the top directory of the object `word` on the server `demopc` to the local directory `/tmp`, convert the files from DOS to UNIX text format, and supply the password `mypass`, as user `Andrew`:

```
rucopy -u Andrew -p mypass -c //demopc/word/*.txt /tmp
```

3. Use the command below to copy the file `autoexec.bat` in the top directory of the shared object `root` on the server `vampire` to the local file `autoexec.dos` in the current directory. The object `root` has share-mode access and no password.

```
rucopy //vampire/root/autoexec.bat autoexec.dos
```

4. Use the following command to display the contents of the file `notes.txt` in the top directory of the shared object `root` on the server `demopc`, pipe the output to the program `more`, and prompt for a password, as user `Templeton`:

```
rucopy -u Templeton -P -s //demopc/root/notes.txt | more
```

5. Use the command below to copy all files with extension `.h` in the current local directory to the subdirectory `headers` of the shared object `apps` on the server `demopc`, convert the files from UNIX to DOS text format, and display names of files as they copy. The object `apps` has share-mode access and no password.

```
rucopy -c -v *.h //demopc/apps/headers
```

6. Use the command below to copy all files from the directory `/tmp` to the shared object `paint` on the server `demopc`, which expects the character set "shift-jis", as user `joe`, with password `joepass2`:

```
rucopy -u joe -p joepass2 -C shift-jis /tmp/*.* //demopc/paint
```

rudel

This command, used with LM-NT-OS/2 servers, deletes remote files. You may delete system or hidden files.

Location

TNHOME/usr/bin

Usage

```
rudel [-u username] [{-p password|-P}] [-C charset]  
      [-a {s|h}] //servername/object/path
```

Options

<i>-u username</i>	Specify the name of the user for the remote server.
<i>-p password</i>	Specify <i>username</i> 's password on the command line. No subsequent password prompt appears.
<i>-P</i>	Prompt for <i>username</i> 's password. The password does not display as you type it. This option proves especially if you want to include the command but not the password in a batch file.
<i>-C charset</i>	Specify the client character set. If not specified, the character set defaults to <code>builtin-codepage-437</code> . Valid character sets include: <code>builtin-mac-roman</code> <code>builtin-iso-latin-1</code> <code>builtin-unicode</code> <code>builtin-codepage-437</code> You can use additional character sets if you install TAS.
<i>-a</i>	Include files of one or both of the following types: <code>s</code> — System files <code>h</code> — Hidden files
<i>servername</i>	Specify the name of the remote server.
<i>object</i>	Specify the name of a shared object on a remote LM-NT-OS/2 server.
<i>path</i>	Specify a full or relative directory and file on the remote server. This option permits the use of wildcards.

Note

If you include no `-a` options, this command finds only the files marked Read-Only, Directory, and Archive.

Examples

1. Use the following command to delete all files in the subdirectory `tmp` of the shared object `root` on the server `pipe` and prompt for a password:

```
rudel -P //pipe/root/tmp/*.*
```

2. Use the command below to delete the files with the extension `.obj` in the subdirectory `comp` of the shared object `dev` on the server `projectpc`. The shared object `dev` has no password.

```
rudel //projectpc/dev/comp/*.obj
```

3. Use the following command to delete all files with the extension `.tmp`, including hidden files, using the object data in the directory `tmp` on the server `Troy`, and prompt for a password, as user `galaxy`:

```
rudel -u galaxy -P -ah //Troy/data/tmp/*.tmp
```

rudir

This command, for use with LM-NT-OS/2 servers, displays the directory listing of remote files. The listing displays the volume name, file names, file sizes, file modification time stamps, number of bytes used, and number of bytes free on the disk. The format of the listing depends on the negotiated protocol. If UNIX and the server negotiated LANMAN 2.0 or higher as the protocol, this command uses the long file name convention; otherwise, it uses the DOS 8.3 file name convention.

Location

TNHOME/usr/bin

Usage

```
rudir [-u username] [{-p password|-P}] [-C charset]  
[-a{s|h}] //servername/object/path
```

Options

<i>-u username</i>	Specify the name of the user for the remote server.
<i>-p password</i>	Specify <i>username</i> 's password on the command line. No subsequent password prompt appears.
<i>-P</i>	Prompt for <i>username</i> 's password. The password does not display as you type it. This option proves especially if you want to include the command but not the password in a batch file.
<i>-C charset</i>	Specify the client character set. If not specified, the character set defaults to <code>builtin-codepage-437</code> . Valid character sets include: <code>builtin-mac-roman</code> <code>builtin-iso-latin-1</code> <code>builtin-unicode</code> <code>builtin-codepage-437</code> You can use additional character sets if you install TAS.
<i>-a</i>	Include files of one or both of the following types: <code>s</code> — System files <code>h</code> — Hidden files If you do not include the <i>-a</i> option, <code>rudir</code> does not list system and hidden files and directories.
<i>servername</i>	Specify the name of the remote server.
<i>object</i>	Specify the name of a shared object on a remote LM-NT-OS/2 server.
<i>path</i>	Specify a full or relative directory and file on the remote server. The path specification permits wildcards.

Note

If you include no *-a* option, this command finds only the files marked Read-Only, Directory, and Archive.

Examples

1. Use the following command to list the files in the subdirectory `word/doc` of the shared object `root` on the server `demopc`, prompt for a password, and use the “`euc-jp`” character set:

```
rudir -P -C euc-jp //demopc/root/word/doc/*.*
```

2. Use the following command to list all files in the top level of the shared object `root` with password `mypasswd` on the server `demopc`, including system and hidden files:

```
rudir -p mypasswd -ash //demopc/root/*.*
```

3. Use the command below to list all files with the `.exe` extension on the server `columbia` and prompt for a password, as user `salmon`. The object, `dev`, has the path `fry`.

```
rudir -u salmon -P //columbia/dev/fry/*.exe
```

rumd

This command, for use with LM-NT-OS/2 servers, creates a directory on a remote server.

Location

`TNHOME/usr/bin`

Usage

```
rumd [-u username] [{-p password|-P}] [-C charset] //servername/object/path
```

Options

<code>-u <i>username</i></code>	Specify the name of a user for the remote server.
<code>-p <i>password</i></code>	Specify <i>username</i> 's password on the command line. No subsequent password prompt appears.
<code>-P</code>	Prompt for <i>username</i> 's password. The password does not display as you type it. This option proves especially if you want to include the command but not the password in a batch file.
<code>-C <i>charset</i></code>	Specify the client character set. If not specified, the character set defaults to <code>builtin-codepage-437</code> . Valid character sets include: <code>builtin-mac-roman</code> <code>builtin-iso-latin-1</code> <code>builtin-unicode</code> <code>builtin-codepage-437</code> You can use additional character sets if you install TAS.
<code><i>servername</i></code>	Specify the name of the remote server.
<code><i>object</i></code>	Specify the name of a shared object on a remote LM-NT-OS/2 server.
<code><i>path</i></code>	Specify a full directory on the remote server.

Examples

1. Use the following command to create the subdirectory `tmp` in the top directory of the shared object `root` on the server `aztecserver` and prompt for the object's password:

```
rumd -P //aztecserver/root/tmp
```

2. Use the following command to create the subdirectory `perm` on the object `mta` on the server `boston` for the user `charlie` with password `broke`:

```
rumd -u charlie -p broke //boston/mta/perm
```

rumessage

This command sends a message to a remote client on LM-NT-OS/2 servers such as Windows for Workgroups, Windows 95, or Windows NT.

Location

TNHOME/usr/bin

Usage

rumessage [-C *charset*] //*servername* *text*

Options

<i>-C charset</i>	Specify the client character set. If not specified, the character set defaults to <i>builtin-codepage-437</i> . Valid character sets include: <i>builtin-mac-roman</i> <i>builtin-iso-latin-1</i> <i>builtin-unicode</i> <i>builtin-codepage-437</i> You can use additional character sets if you install TAS.
<i>servername</i>	Specify the name of the remote server.
<i>text</i>	Specify the message text you want to send.

Examples

1. Use the following command to send a message to the server *myserver*:

```
rumessage //myserver Please share a printer.
```

2. Use the following command to send a message to the server *myserver* using the “*shift-jis*” character set:


```
rumessage -C shift-jis //myserver Please share a printer.
```

ruprint

This command prints files on a remote SMB server.

Location

TNHOME/usr/bin

Usage

```
ruprint [-u username] [{-p password|-P}] [-N copies] [-v]
        [-c] [filespec] //servername/object
```

Options

-u <i>username</i>	Specify the name of a user for the remote server.
-p <i>password</i>	Specify <i>username</i> 's password on the command line. No subsequent password prompt appears.
-P	Prompt for <i>username</i> 's password. The password does not display as you type it. This option proves especially if you want to include the command but not the password in a batch file.
-N <i>copies</i>	Indicate the number of copies to print.
-v	Display the file names as they copy to the remote server.
-c	Convert text files from UNIX to DOS format—line feeds to carriage return/line feeds. Use this option only if the remote server runs DOS.
<i>filespec</i>	Indicate the file specifications, including paths, of the local UNIX files to print. If you do not use this option, the print queue appears.

<i>servername</i>	Specify the name of the remote server.
<i>object</i>	Specify the name of the shared printer defined on a remote LM-NT-OS/2 server.

Examples

1. Use the following command to print the file `/usr/notes/info.txt` on the printer shared as `kathpr` on the server `jessicaserver`, and prompt for a password:

```
ruprint -P /usr/notes/info.txt /jessicaserver/kathpr
```

2. Use following command, as user `sphinx`, to print the file `/usr/notes/info.txt` on the printer shared as `kathpr` on the server `heatherserver` with a prompt for the password:

```
ruprint -u sphinx -P /usr/notes/info.txt //heatherserver/kathpr
```

3. Use the following command, as user `joe`, to display the queue information for the printer shared as `maxar` on the server `sytos` with a prompt for the password:

```
ruprint -u joe -P //sytos/maxar
```

Using ruprint as a Printer

The following instructions describe configuring `ruprint` as a regular UNIX printer. For example, with `ruprint` configured as a UNIX printer, you can redirect print jobs to a printer on a remote server that does not run LMserver.

The following examples involve a remote PostScript printer shared as `prn` on the server `dosserver` running TAS. It has the UNIX print queue `dosq`. Refer to your UNIX documentation for complete information on configuring a printer.

For BSD UNIX:

1. Add the following entry for `ruprint` `printcap` to the `/etc/printcap` file:

```
dosq|lp:\

      :lp=/dev/null:\

      :lf=/usr/adm/lpd-errs:\

      :sd=/usr/spool/dosqd:\

      :mx#0:\

      :rw:\

      :sh:\

      :sf:\

      :if=/usr/bin/dosq.rup:
```

2. Create the spool directory, indicated by :sd in the printcap entry, as follows:

```
cd /usr/spool

mkdir dosqd

chown root dosqd

chgrp bin dosqd

chmod 775 dosqd

chmod gas dosqd
```

3. Create an input filter, indicated by :if in the printcap entry, as follows:

```
#!/bin/sh

# lp filter for ruprint

PATH=/bin:/usr/bin:/usr/local/bin:TNHOME/usr/bin

export PATH

TF=/tmp/dosq.$$

cat - $TF
```

If you need to make the file a PostScript file, run it through the `psf` filter using the script below. Some operating systems, like Solaris, do this automatically.

```
grep '%!PS-Adobe' $TF /tmp/grep.out 2>&1

if [ $? -ne 0 ]; then

psf $TF ${TF}.1 2>&1

rm $TF

TF=${TF}.1

fi

ruprint $TF //dosserver/prn 2>&1

rm -f $TF

exit 0
```

For System V:

1. To create the same `dosq.rup` input filter as for BSD UNIX, make sure the line beginning with `cat` reads:

```
cat $6 $TF
```

This script does not work if the file name does not come sixth (\$6) on the command line. You can diagnose this by inserting the following line in the script just before the cat line to determine exactly which command line argument contains the file name:

```
echo $1 $2 $3 $4 $5 $6 $7
```

2. **After attempting to print to this printer, examine /tmp/args.test to determine the sequence of arguments.**
3. **Create the printer definition by entering the following command:**

```
Rapidan -p dosq -i /usr/bin/dosq.rup -v /dev/null
```

4. **Enable printing and allow jobs to queue by entering the following commands:**

```
enable dosq  
accept dosq
```

5. **To create a printer queue and device, add the following to the end of /etc/qconfig:**

```
/etc/qconfig:
```

```
dosq:
```

```
device = dosqdev
```

```
up =TRUE
```

```
dosqdev:
```

```
file = FALSE
```

```
access = write
```

```
backend = /usr/bin/dosq.rup
```

rurd

This command deletes a directory on a remote server.

Location

TNHOME/usr/bin

Usage

```
rurd [-u username] [{-p password|-P}] [-C charset]  
//servername/object/path
```

Options

<i>-u username</i>	Specify the name of a user for the remote server.
<i>-p password</i>	Specify <i>username</i> 's password on the command line. No subsequent password prompt appears.
<i>-P</i>	Prompt for <i>username</i> 's password. The password does not display as you type it. This option proves especially if you want to include the command but not the password in a batch file.
<i>-C charset</i>	Specify the client character set. If not specified, the character set defaults to <i>builtin-codepage-437</i> . Valid character sets include: <i>builtin-mac-roman</i> <i>builtin-iso-latin-1</i> <i>builtin-unicode</i> <i>builtin-codepage-437</i> You can use additional character sets if you install TAS.
<i>servername</i>	Specify the name of the remote server.

<i>object</i>	Specify the name of a shared object on a remote LM-NT-OS/2 server.
<i>path</i>	Specify a full directory on the remote server.

Example

Use the following command to access the remote server, remove the subdirectory `tmp` from the top directory of the shared object `root` on the server `kathserver`, prompt for a password, and use the character set “builtin-unicode”, as user Heather:

```
rurd -u Heather -P -C builtin-unicode //kathserver/root/tmp
```

ruren

This command renames files on a remote server.

Location

`TNHOME/usr/bin`

Usage

```
ruren [-u username] [{-p password|-P}] [-C charset]
      [-a{s|h}] //servername/object/path1 path2
```

Options

<code>-u <i>username</i></code>	Specify the name of the user for the remote server.
<code>-p <i>password</i></code>	Specify <i>username</i> 's password on the command line. No subsequent password prompt appears.
<code>-P</code>	Prompt for <i>username</i> 's password. The password does not display as you type it. This option proves especially if you want to include the command but not the password in a batch file.

<i>-C charset</i>	Specify the client character set. If not specified, the character set defaults to <code>builtin-codepage-437</code> . Valid character sets include: <code>builtin-mac-roman</code> <code>builtin-iso-latin-1</code> <code>builtin-unicode</code> <code>builtin-codepage-437</code> You can use additional character sets if you install TAS.
<i>-a</i>	Include files of one or both of the following types: <code>s</code> — System files <code>h</code> — Hidden files
<i>servername</i>	Specify the name of the remote server.
<i>object</i>	Specify the name of a shared object on a remote LM-NT-OS/2 server.
<i>path1</i>	Specify a full or relative source directory and file on the remote server. This option permits the use of wildcards.
<i>path2</i>	Specify a full or relative target directory and file on the remote server. With <code>path2</code> a relative directory, the server assumes this variable relates to the object's top directory if it starts with a slash (/); otherwise, it relates to <code>path1</code> . This option permits the use of wildcards.

Notes

If you include no `-a` options, this command finds only the files marked Read-Only, Directory, and Archive.

Examples

1. Use the following command to rename the file `autoexec.bat` in the top directory of the shared object `root` on the server `kathserver` to `autoexec.old`, prompt for a password, and use the character set "builtin-unicode":

```
ruren -P -C builtin-unicode //kathserver/root/autoexec.bat autoexec.old
```


2. Use the following command to access the remote server and rename the file `prog.c` in the subdirectory `apps` of the shared object `root` on the server `monaserver` into the subdirectory `sources` if the object has no password:

```
ruren //monaserver/root/apps/prog.c /sources/prog.c
```

rush

This command establishes a remote utility shell session to provide an environment for performing several remote commands without having to reconnect with each command.

Location

TNHOME/usr/bin

Usage

```
rush [-u username] [{-p password|-P}] [-C charset]  
      [+{a|s|h|r}] [-{a|s|h|r}] //servername/object/path
```

Options

-u <i>username</i>	Specify the name of the user for the remote server.
-p <i>password</i>	Specify <i>username</i> 's password on the command line. No subsequent password prompt appears.
-P	Prompt for <i>username</i> 's password. The password does not display as you type it. This option proves especially if you want to include the command but not the password in a batch file.

<i>-C charset</i>	Specify the client character set. If not specified, the character set defaults to <code>builtin-codepage-437</code> . Valid character sets include: <code>builtin-mac-roman</code> <code>builtin-iso-latin-1</code> <code>builtin-unicode</code> <code>builtin-codepage-437</code> You can use additional character sets if you install TAS.
<i>+</i>	Set one or more of the attributes below.
<i>-</i>	Clear one or more of the attributes below.
(Attributes) If you do not indicate either to set or clear options, <code>rush</code> returns the current file options.	<i>a</i> — Archive attribute <i>s</i> — System attribute <i>h</i> — Hidden attribute <i>r</i> — Read-Only attribute
<i>servername</i>	Specify the name of the remote server.
<i>object</i>	Specify the name of a shared object on a remote LM-NT-OS/2 server.
<i>path</i>	Specify a full directory on the remote server.

Notes

1. Once you establish the connection, the name of the remote server displays in the prompt. The remote utilities shell enables the commands shown in the following table:

<i>! unix_command</i>	Executes a local UNIX command.
<i>? [command]</i> or <i>help [command]</i>	Acquires information on a remote utilities command.
<i>attr [+{a s h r}]</i> <i>[-{a s h r}]</i>	Shows, sets, or clears remote file attributes.

<code>cd path</code>	Changes current remote directory.
<code>del path</code>	Deletes remote files.
<code>dir [-p] [+{a s h r}] [-{a s h r}]</code>	Lists remote files.
<code>exit</code> or <code>quit</code>	Exits the remote utilities shell.
<code>get [-v] [-c] [-s] path1 [path2]</code>	Copies files from the remote server.
<code>lcd path</code>	Changes current local directory.
<code>lpwd</code>	Shows current local directory.
<code>md path</code>	Creates a remote directory.
<code>msg text</code>	Sends a message to the remote server.
<code>pwd</code>	Shows current remote directory.
<code>ren path1 path2</code>	Rename remote file(s).
<code>rd path</code>	Removes a remote directory.
<code>set [value [options]]</code>	Sets a global value.
<code>time [-s]</code>	Displays remote system time.
<code>type path</code>	Displays a remote text file on the local monitor.

2. All commands entered in the remote utilities shell use the password, server name, and object specified in the `rush` command. To change one of these parameters, you must terminate the shell and issue a new `rush` command.

Examples

1. Use the following command, as user `joe`, to connect to the object `outnet` on the server `netserver` with path `yellowbrick` and password `joepass` using the client character set “iso-greek” for all SMB requests:

```
rush -u joe -p joepass -C iso-greek //netserver/outnet/yellowbrick
```

2. Use the following command to execute the UNIX command `ls` by temporarily escaping to a UNIX shell:

```
! ls
```

3. Use one of the commands below to display information about the remote utilities shell `pwd`, as listed in the table. If you do not specify a command, the screen displays the list of commands available.

```
? pwd
```

```
help pwd
```

4. Use the following command to display, set, or clear file attributes for `dorothy.txt` on server `far`:

```
attr //far/dorothy.txt
```

5. Use the following command to change the current remote directory to `skip/hop/jump`:

```
cd skip/hop/jump
```

6. Use the command below to delete the remote files `ink.doc` and `inker.doc`. This command works like the remote utilities `rudel` command. It permits wildcards.

```
del ink.doc inker.doc
```

7. Use the command below to list the contents of the remote directory at `jump/hop/skip`, display the output one screen at a time, and include system and hidden files. Press `e` to display the next page.

```
dir -p -ash jump/hop/skip
```

8. Use one of the following commands to terminate the current remote utilities shell session and return to the UNIX prompt:

```
exit  
quit
```

9. Use the command below to copy the remote files `turtle.txt` and `schmurtle.gif` to the file `bagpipe` on the local computer, display the file names as they copy, convert text files from DOS to UNIX format, and display the contents of the files. This works like the remote utilities `rucopy` command. If a target file already exists, the system prompts you for action as with the remote utilities `rucopy` command, in which `o` = “overwrite”, `a` = “overwrite all without further prompting”, `c` = “continue without copying”, and `n` = “use new file name”.

```
get -v -c -s turtle.txt schmurtle.gif bagpipe
```

10. Use the command below to temporarily change the local current directory to `rainy/rainier/rainiest`. This change lasts only as long as the remote utilities shell remains active:

```
lcd rainy/rainier/rainiest
```

11. Use the following command to display the name of the current local directory:

```
lpwd
```

12. Use the command below to create a remote directory using the path `seed/sapling/tree`. This works like the remote utilities `rumd` command.

```
md seed/sapling/tree
```

13. Use the command below to send the message “The end draweth nigh” to the remote server. This works like the remote utilities `rumessage` command. The message appears at the server only if the server can receive messages. Desk To Desk and some other DOS and OS/2 servers can receive and display messages, whereas UNIX-based LM-NT-OS/2 servers cannot.

```
msg The end draweth nigh
```

14. Use the command below to copy the file `fingers` from the local computer to `toes` on the remote computer. This works like the remote utilities `rucopy` command and has the same options as the `get` command.

```
put fingers toes
```

15. Use the following command to show the current remote directory:

```
pwd
```

16. Use the command below to rename the file `good` to `better`. This works like the remote utilities `ren` command.

```
ren good better
```

17. Use the command below to remove the directory `urg` from the remote server. This works like the remote utilities `rurd` command.

```
rd urg
```

18. Use the sequence of commands below to avoid having to include the `-ah` option in the `dir` command. The current attribute setting appears when the command completes. This command defaults to `d`, the directory attribute.

```
set attribute +h
```

```
dir
```

The listing includes files with hidden attributes, the same as if you entered:

```
dir -ah
```

19. Use the command below to avoid having to include the `-v` option on commands to display the names of files as they copy. To turn off the verbose attribute, enter the above command again.

```
set verbose
```

20. Use the command below to reset the prompt so that only the remote server name appears. Enter the same command again to resume the default behavior.

```
set prompt
```

21. Use the command below to generate a trace file called `rutrace.txt` for Syntax Technical Support that includes incoming and outgoing SMB packets, program procedures, and program errors at a moderate level of tracing detail. To turn tracing off, use `set tracing off`.

```
set tracing -zin=5 -zout=5 -zproc=5 -ztracefile=rutrace.txt
```

Use the command below to display and synchronize local time with the remote server's system time. Only the superuser can use the `-s` option. This option only works if the remote server supports the request.

```
time [-s]
```

- 22. Use the command below to display the contents of the remote file `roland.txt`, at the server `gunslingers`, on the local monitor screen. This command has the same effect as `get -s` when you do not specify a destination path.**

```
type //gunslingers/roland.txt
```

ruslist

This command displays the browse list of all LM-NT-OS/2 servers on the network. Use it only with LM-NT-OS/2 servers.

Location

TNHOME/usr/bin

Usage

To obtain the list of all LM-NT/OS/2 servers known to the local system and display a combined list:

```
ruslist [-v] [-w workgroup]
```

To obtain the list as known to a server for a particular workgroup or domain by a domain master browser running on the local system:

```
ruslist [-v] -w workgroup -n transport -i interface [  
-p ipaddr] [-l] //servername
```

Options

<code>-v</code>	Display verbose output.
<code>-w <i>workgroup</i></code>	Specify the name of the workgroup or domain whose browse-list you want to see.
<code>-n <i>transport</i></code>	Indicate the transport over which <code>ruslist</code> will obtain the browse-list. Possible values include <code>tcpip</code> , <code>tmbu</code> , and <code>altnb</code> .
<code>-i <i>interface</i></code>	Indicate the interface over which <code>ruslist</code> will obtain the browse-list. Possible values include names of the interfaces as displayed by the output of <code>tniface</code> for a given transport type.
<code>-p <i>ipaddr</i></code>	Specify the IP address of the server.
<code>-l</code>	Obtain only the local list—the list of names learned by the server.
<code><i>servername</i></code>	Specify the server in the workgroup or domain from which you want to obtain the list.

Examples

1. Use the following command to obtain the list of servers with all transports and interfaces known to the local system and display a combined list:

```
ruslist
```

2. Use the following command to obtain the list of servers with all transports and interfaces for the workgroup `tasserver`:

```
ruslist -w tasserver
```

3. Use the following command if a user on a system with TCP/IP interface name `204.242.8.10` wants to obtain a verbose list of all servers in the `tasserver` workgroup with master browser `huey` and transport `tcpip`:

```
ruslist -v -w tasserver -n tcpip -i 204.242.8.10 //huey
```

runtime

This command allows the current system to display the remote server's system time. Any user can display the remote server's time. When you use the `-s` option, you—the superuser—can synchronize the local system time to that of the remote server.

Location

TNHOME/usr/bin

Usage

```
runtime [-u username] [{-p password|-P}] [-s] //servername/object
```

Options

<code>-u <i>username</i></code>	Specify the name of the user for the remote server.
<code>-p <i>password</i></code>	Specify <i>username</i> 's password on the command line. No subsequent password prompt appears.
<code>-P</code>	Prompt for <i>username</i> 's password. The password does not display as you type it. This option proves especially if you want to include the command but not the password in a batch file.
<code>-s</code>	Synchronize the local time to that of the remote server. This requires superuser privileges.
<i>servername</i>	Specify the name of the remote server.
<i>object</i>	Specify the name of a shared object on a remote LM-NT-OS/2 server.

Notes

1. Only the superuser can change the local system time. Any user can run this command to display the remote server's time.
2. The remote server must run TAS. When used with any other server, an error message may result.

Examples

1. Use the following command to display the time at the remote TAS server syntax as user orange and prompt for a password:

```
rutime -u orange -P //syntax
```

2. Use the following command to access the remote server, make the server prompt you for a password, and synchronize the local time to the time on the server syntax and the object time, as the user Tommy.

```
rutime -u Tommy -P -s //syntax/time
```

ncget

This command copies a file from a remote NetWare server the local disk. This utility does not support wildcards.

Location

TNHOME/usr/bin

Usage

```
ncget -s servername -u username {-p password|-P}  
[-C charset] [-v] volume:[/]path [localfile]
```

Options

<i>servername</i>	Specify the name of the remote server.
-u <i>username</i>	Specify the name of the user for the remote server.
-p <i>password</i>	Specify <i>username</i> 's password on the command line. No subsequent password prompt appears.

-P	Prompt for <code>username</code> 's password. The password does not display as you type it. This option proves especially if you want to include the command but not the password in a batch file.
-C <i>charset</i>	Specify the client character set. If not specified, the character set defaults to <code>builtin-codepage-437</code> . Valid character sets include: <code>builtin-mac-roman</code> <code>builtin-iso-latin-1</code> <code>builtin-unicode</code> You can use additional character sets if you install TAS.
-v <i>volume</i>	Specify the name of the volume on which the remote file resides.
/ <i>path</i>	Specify the path to the remote file. Do not use wildcards.
<i>localfile</i>	Specify the path and name for the local copy of the file. Enter a period (.) to use the current directory and the same file name as on the remote host. Enter a hyphen (-) to copy the file to "standard output".

Examples

1. Use one of the following commands to copy the file `pure.doc` from the directory `subdir` on the volume `public` of the server `library` to the local file `impure.doc`, as the remote user `tanya`:

```
ncget -s library -u tanya -P -v public:subdir/pure.doc impure.doc
ncget -s library -u tanya -P -v public:/subdir/pure.doc impure.doc
```

2. Use the following command to copy the file `village/well.doc` from the server `valhalla` to the NetWare volume `sys`, as user `eric` with password `viking`:

```
ncget -s valhalla -u eric -p viking -v sys:village/well.doc
```

ncprint

This command prints local files to a remote printer.

Location

TNHOME/usr/bin

Usage

```
ncprint [-c] [-nf] -s servername -q queuename [-N copies]  
-u username [{-p password|-P}] filename
```

Options

-c	Convert text files from UNIX to DOS format—for instance, convert line feeds to carriage return/line feeds. Use this option only if the remote server runs DOS; you need not use this option with most printers.
-n	Forbid banner printing. The print job of the <code>ncprint</code> command includes a banner page by default; this option suppresses the printing of the banner page.
-f	Prevent the remote server from sending the default form feed after the print job.
-s <i>servername</i>	Specify the name of the remote server. This does not necessarily coincide with the UNIX host name.
-q <i>queuename</i>	Specify the name of a print queue at <i>servername</i> .
-u <i>username</i>	Specify the UNIX account to access the remote queue.
-N <i>copies</i>	Specifies the number of copies to print.
-p <i>password</i>	Display <i>username</i> 's password on the command line.

-P	Prompt for username's password.
<i>filename</i>	Specify the full or relative path to the local file you want to print. If you specify no file names, this command assumes standard input stdin. This option does not support wildcards.

Examples

1. Use the command below to print four copies of the local file `/tmp/that.doc` to the print queue `starblazer` on the server `flip`, as user `john` with password `abcdefgh`. This command also prevents banner printing and post-printing form feeds.

```
ncprint -nf -s flip -q starblazer -N 4 -u john
-p abcdefgh /tmp/that.doc
```

2. Use the command below to print the local file `this.doc` from the current local directory and send the print job to the print queue `nov4dot` on the server `nov4` as user `root`. This command does not display the password.

```
ncprint -s nov4 -q nov4dot -u root -P this.doc
```

3. Use the command below to print 10 copies of the file `rampage.doc` in the directory `tmp` to the print queue `village` on server `hi`, as user `mildred` with password `market`:

```
ncprint -s hi -q village -N 10 -u mildred -p market
/tmp/rampage.doc
```

ncput

This command copies local files to remote NetWare servers.

Location

TNHOME/usr/bin

Usage

```
ncput -s servername -u username {-p password|-P}  
[-C charset] localfile [-v] volume:[/]path
```

Options

<i>-s servername</i>	Specify the name of the remote server. This does not necessarily coincide with the UNIX host name.
<i>-u username</i>	Specify the name of the user on the remote server.
<i>-p password</i>	Display <i>username</i> 's password on the command line.
<i>-P</i>	Prompt for <i>username</i> 's password.
<i>-C charset</i>	Specify the client character set. If not specified, the character set defaults to <code>builtin-codepage-437</code> . Valid character sets include: <code>builtin-mac-roman</code> <code>builtin-iso-latin-1</code> <code>builtin-unicode</code> You can use additional character sets if you install TAS.
<i>localfile</i>	Specify the path and name for the local copy of the file. Enter a period (.) to use the current directory and the same file name as on the remote host. Enter a hyphen (-) to copy the file to "standard output".
<i>-v volume</i>	Specify the name of the volume on which the remote file resides.
<i>/path</i>	Specify the path to the remote file. Do not use wildcards.

Examples

1. Use the following command to copy the file `enchant.doc` to the volume `sys` in the directory `midsummer` on the remote server `forest` and prompt for a password, as user `puck`:

```
ncput -s forest -u puck -P enchant.doc -v sys:/midsummer
```

2. Use one of the commands below to copy the file `burn.doc` to the NetWare volume `marshmallows` on the server `truck`, as user `steve` with password `fire`. The file `burn.doc` resides in the root of the volume.

```
nccput -s truck -u steve -p fire burn.doc -v marshmallows:/burn.doc
```

```
nccput -s truck -u steve -p fire burn.doc marshmallows:/burn.doc
```

3. Use the following command to copy the file `dexter.doc` from the server `invention` to the NetWare volume `laboratory` and prompt for a password, as user `deedee`:

```
nccput -s invention -u deedee -P dexter.doc -v laboratory:/dexter.doc
```

nctime

This utility allows the current system to display a remote NetWare server's system time.

Location

`TNHOME/usr/bin`

Usage

`nctime -s servername`

Option

<code>-s <i>servername</i></code>	Specify the name of the remote server.
-----------------------------------	--

Example

Use the following command to get the system time from the server `cinderella`:

```
nctime -s cinderella
```

ncslist

This command displays a list of NetWare services.

Location

TNHOME/usr/bin

Usage

ncslist [-s *servername*] [-t *type*]

Options

-s <i>servername</i>	Specify the name of the remote server. This does not necessarily coincide with the UNIX host name.
-t <i>type</i>	Specify a service type. Define it as a number or a service type string defined in the table below.

Description	Number	Service Type
file service	0x0004 (or) 4	file
terminal service	0x0247 (or) 583	term
igate service	0x07C2 (or) 1986	igate
nvterm service	0x009E (or) 158	nvt
all services (default)	0xFFFF (or) 65535	

Examples

1. Use one of the following commands to list active services for all service types from the server `selma`:


```
ncslist -s selma -t 0xFFFF
ncslist -s selma -t term
```

2. Use the following command to list all active terminal services from the server selma:

```
ncslist -s selma -t 0x0247
```

3. Use the following command to list all active services of all service types for the entire network:

```
ncslist -t 0xFFFF
```

4. Use the following command to list all active terminal services for the entire network:

```
ncslist -t term
```

TotalNET Maintenance Commands

This chapter lists TotalNET system maintenance commands, which reside in the TNHOME/usr/sbin directory. It covers the following topics:

- “Administration Utilities” on page 129 — Commands for administering basic server, realm, and service functions and generating information on the status of server operations.
- “Configuration Utilities” on page 144 — Commands for controlling and delimiting the various functions of TAS.

Realm Options

Use realm options for all TotalNET user and maintenance commands at and below the realm level. These options require a set of services on which to operate. You can only specify one of each of these options at a time. Since you use realm options to select objects on which to run commands, you do not need to use all three every time.

Option	Variable	Description
-r	realm	realm
-s	name:type	service
-t	type	service type

General Configuration Options

Most of the TotalNET utilities support the following options:

-L	list
-R	read
-A	add
-M	modify
-D	delete

You can specify only one of these options at a time. By default, a command without a specified option works the same as if you specify -L. Specifying -R returns all attributes for all applicable sections, including transports, realms, and service types.

Special Options

Special options apply to some TotalNET user and maintenance commands. They identify variables for TotalNET administration and configuration commands and attributes within these commands. The following table lists all special options applicable to the TAS user and maintenance commands:

Option	Variable	Description
-a	attribute	attribute flag Follow -a with the appropriate attribute for the command. You can use multiple -a options. In the case of Read (-R) attributes, -a specifies keys. In the cases of Modify (-M) and Add (-A) attributes, -a specifies key value pairs separated by equals signs (=). Enclose attribute values containing spaces in quotes.
-b	product	license product
-c	client-context	client context
-d	service:type	advertisement
-i	interface	interface
-j	attach-point	attach point

Option	Variable	Description
-l	key	license key
-m	atmap	atmap
-n	transport	transport
-o	route	route
-p	printer	printer
-s	static-name	static NetBIOS name
-u	user	user
-v	volume	volume
-x	suffix	suffix
-z	flag	tracing flag

Administration Utilities

- “atdidck” on page 130
- “tnaccept” on page 131
- “tnck” on page 132
- “tncustom” on page 133
- “tnkill” on page 136
- “tnlicense” on page 138
- “tnreject” on page 140
- “tnshut” on page 141
- “tnstart” on page 142

atdidck

This command checks for problems in the database maintained by ATdidd, the AppleTalk directory ID daemon. It looks for invalid references within the database and for the presence of database entries that do not correspond to existing UNIX directories. The atdidck command only checks the database and reports potential errors in the database to ATdidd. ATdidd then verifies that the error exists and removes the corresponding entry from the database.

For systems that support fixed directory IDs, you must run the atdidck utility periodically. You should run this utility only when you have the AppleTalk file services enabled; that is, when TAS has the ATdidd daemon running.

Location

TNHOME/usr/sbin

Usage

atdidck [-d|-a][-p *path*]

Options

-d	Report all entry delete requests made to ATdidd.
-a	Report all interactions with ATdidd, including requests to delete entries from the database.
-p <i>path</i>	Control existence checks. When you specify the variable <i>path</i> , TAS assumes all paths with <i>path</i> as a prefix exist in the UNIX file system. Use this when you wish to suppress existence checks within the UNIX file system for database entries. For example, with a file system unmounted, TAS assumes any database entries that correspond to files on that system do not exist, and it removes them from the database.

Examples

1. Use the following command to check and report all entry “delete” requests:

```
atdidck -d
```

2. Use the following command to check and report all interactions with ATdidd:

```
atdidck -a
```

3. Use the following command to suppress checking of all files for their existence:

```
atdidck -p /
```

4. Use the following command to suppress checking of all subdirectories in the `documents` and `archive` directories:

```
atdidck -p /documents -p /archive
```

tnaccept

This command causes selected services to accept client connections. The `tnstart` command also executes this command.

Location

TNHOME/usr/sbin

Usage

```
tnaccept [-r realm] [-t type] [-s service]
```

Options

- “Realm Options” on page 127

Examples

1. Use the following command to enable new client connection attempts:

```
tnaccept
```

2. Use the following command to enable new connections for services in the NetWare realm.

```
tnaccept -r NW
```

3. Use the following command to enable new connections for file services:

```
tnaccept -t file
```

4. Use the following command to enable new connections for the file service sparky:

```
tnaccept -s sparky:file
```

tnck

This command checks and repairs the TAS lock information and runtime database. When it finds errors, it reports them on the command line and, if you so choose, corrects them. The runtime database stores information about running transports, programs, and connected clients.

Location

TNHOME/usr/sbin

Usage

```
tnck [-n] [-r realm] [-t type] [-s service]
```

Options

- “Realm Options” on page 127

(no options)	Check and repair the runtime database for all services in all realms.
-n	Check the runtime database for a file service, without repairing it.

Examples

1. Use the following command to check the runtime database of the file service `spur` without repairing the database:

```
tnck -n -s spur:file
```

2. Use the following command to check and repair all file services in the LM-NT-OS/2 realm:

```
tnck -r NB -t file
```

3. Use the following command to check and repair the runtime database of file service `spock`:

```
tnck -s spock:file
```

tncustom

This command allows you to configure the environment of `tnpasswd`. You can use it to configure the prompts you want `tnpasswd` to expect from the UNIX password program. These include prompts for user name, old password, and new password.

You can also use this command to set the name of the UNIX password command. You can define the values used for the prompts as patterns, using shell-style, or glob-style, pattern-matching. For example, you can configure the old password prompt as `*[Oo]ld*word:`. This means it matches all of the following prompts:

```
Old password:
old password:
Enter your old password:
```

For further information on shell-style pattern matching, refer to the UNIX man pages for the Bourne shell.

Location

TNHOME/usr/sbin

Usage

```
tncustom [-L]
tncustom [-R [-u utility [{-a attribute}]]
tncustom (-A|-M) -u utility {-a attribute=value}
tncustom -D -u utility
```

Options

- “General Configuration Options” on page 127
- “Special Options” on page 128

<code>-u <i>utility</i></code>	Specify the utility.
--------------------------------	----------------------

Attributes

- “command” on page 134
- “new-prompt” on page 134
- “old-prompt” on page 135
- “user-prompt” on page 135

command

This attribute names the UNIX command to run when changing a user’s password, along with any command-line options. It defaults to `passwd`.

Usage:

```
tncustom -A -u tpasswd -a command=value
```

new-prompt

This attribute designates the patterns to match the password program’s prompt for the new password. You can define any number of patterns.

Usage:

```
tncustom -A -u tpasswd -a new-prompt=string
```

old-prompt

This attribute designates the patterns to match the password program's prompt for the old password. You can define any number of patterns.

Usage:

```
tncustom -A -u tnpasswd -a old-prompt=string
```

user-prompt

This attribute designates the patterns to match the password program's prompt for a user name. You can define any number of patterns. Most UNIX password programs do not prompt for a user name, in which case you do not need to set this attribute.

Usage:

```
tncustom -A -u tnpasswd -a user-prompt=string
```

Examples

1. Use the following command to list all defined utilities:

```
tncustom -L
```

2. Use the following command to add the `command` attribute of value `/usr/bin/yppasswd` to the `tnpasswd` utility:

```
tncustom -A -u tnpasswd -a command='/usr/bin/yppasswd'
```

3. Use the following command to modify the `tnpasswd` utility's `new-prompt` attribute, of value `*[Nn]ew*word::`:

```
tncustom -M -u tnpasswd -a new-prompt='*[Nn]ew*word::'
```

4. Use the following command to delete the `tnpasswd` utility:

```
tncustom -D -u tnpasswd
```

5. Use the following command to read the value of the `user-prompt` attribute for the `tnpasswd` utility:

```
tncustom -R -u tnpasswd -a user-prompt
```

output:

Enter Your Password:

tnkill

This command disconnects one or more service clients. The client name, either the UNIX name of a connected user or the name of the client computer as reported by `tnwho` or `tninfo`, has case-sensitivity. You must specify at least one client. Precede each client name with a `-u`.

You can include the minutes until disconnection and an explanation for disconnection on the command line. This warns clients and gives them time to log off. A client's screen displays increasingly frequent warning messages as the shutdown time approaches. To display the messages, the client's network software must enable the receiver capability. You must include minutes when you give a reason.

Location

`TNHOME/usr/sbin`

Usage

```
tnkill [-C] [-f] [-r realm] [-t type] [-s service]  
      {-u user|-c client} [minutes...] [reason...]
```

Options

- “Realm Options” on page 127

<code>-C</code>	Cancel the <code>tnkill</code> command currently in progress.
<code>-f</code>	Terminate all TAS client connections immediately, without sending a default system-shutdown message to connected clients.
<code>-u <i>user</i></code>	Specify the user to disconnect. You may specify user names or client network names and use multiple <code>-u</code> and <code>-c</code> options.

<i>-c client</i>	Specify the client to disconnect. You may specify user names or client network names and use multiple <code>-u</code> and <code>-c</code> options.
<i>minutes</i>	Specify the minutes before disconnection. You must define reason to use this option. This option defaults to 0 and has no upper limit.
<i>reason</i>	Give the reason for the disconnection. You must define minutes to use this option. Your explanation can contain any text of up to 60 characters. If the explanation includes any of the following characters, you may need to enclose it in quotes, depending on the UNIX shell you use: # \$ & * [' " ' ? \ ^ !

Note

Using this command to disconnect a client does not prevent the client from reconnecting.

Examples

1. Use the following command to terminate the connections for users `peter`, `paul`, and `mary` immediately, without stating a reason:

```
tnkill -u peter -u paul -u mary
```

2. Use the following command to cancel all `tnkill` commands you have initiated:

```
tnkill -C
```

3. Use the following command to terminate all TAS client connections immediately, without sending a default system shutdown message to connected clients:

```
tnkill -f
```

4. Use the command below to terminate the connections for users `scotty` and `spock` in five minutes, in order to do system backups on the `superserver`. These users receive the message, "Superuser shutting down in 5 minutes - system backup."

```
tnkill -u scotty -u spock 5 system backup -s superserver:file
```

tnlicense

This command displays information about TAS licensed products. Use it to administer TotalNET licenses.

Location

TNHOME/usr/sbin

Usage

tnlicense [-h] [-l] [-d *product*] [-p *product*] [-k *key*] [-a *key*] [-m *key*]

Options

(no options)	Display information about the licenses for all TAS realms.
-h	Display the system host ID of the TAS host.
-l	Display the product designations of installed licensed products.
-d <i>product</i>	Delete the license for a product.
-p <i>product</i>	Display the license attributes of a product. The designation for product should exactly match one of the designations output by the <code>tnlicense -l</code> command.
-k <i>key</i>	Verify and display the license information from the license keys, including the system ID, the product, the number of users, and the user and time limits. This allows you to examine an activation key before adding it to the TAS ID database. Enclose the key in quotes to prevent misinterpretation by the UNIX shell.
-a <i>key</i>	Install the license for a new product, using the specified key. Enclose the key in quotes to prevent misinterpretation by the UNIX shell.
-m <i>key</i>	Modify the license of an existing licensed product, using the specified key. Use this option for product upgrades. Enclose the key in quotes to prevent misinterpretation by the UNIX shell.

Note

The TAS ID database resides in the `TNID` file in the TAS home directory.

Examples

1. Use the following command to view license information for servers installed on this host, including, for each activation key, the system ID, product, number of users, and user and time limits:

```
tnlicense
```

2. Use the following command to view the unique identifier for the TAS host system:

```
tnlicense -h
```

3. Use the following command to list licensed products on this host:

```
tnlicense -l
```

4. Use the following command to delete the license information for TotalNET Client from the TotalNET ID database file:

```
tnlicense -d ``TotalNET Client``
```

5. Use the following command to view TAS license information:

```
tnlicense -p ``TotalNET Advanced Server``
```

6. Use the following command to display the license information of license key `MeE)-Q65f-<YGA-iHQ>-bI>t-(P<<:`

```
tnlicense -k ``MeE)-Q65f-<YGA-iHQ>-bI>t-(P<<``
```

7. Use the following command to install the license `QxE)-Q87a-GB<A-iHQ>-bI>t-(P<<` for a new product:

```
tnlicense -a ``QxE)-Q87a-GB<A-iHQ>-bI>t-(P<<``
```

8. Use the following command to upgrade to the license `OcQ)-*56y-PU<X-aNT>-eI>w-(T<<` for a new product:

```
tnlicense -m ``OcQ)-*56y-PU<X-aNT>-eI>w-(T<<''
```

tnreject

This command rejects new client connections to selected file services.

Location

TNHOME/usr/sbin

Usage

```
tnreject [-r realm] [-t type] [-s service]
```

Options

- “Realm Options” on page 127

Examples

1. Use the following command to reject all new client connection attempts to file services:

```
tnreject
```

2. Use the following command to reject new connections for all services in the NetWare realm:

```
tnreject -r NW
```

3. Use the following command to reject new connections to file services:

```
tnreject -t file
```

4. Use the following command to reject new connections to file service `spock`:


```
tnreject -s spock:file
```

tnshut

This command performs an orderly shutdown of the TAS system, realms, or services. It can send connected clients a sequence of warning messages first, including the number of minutes until disconnection and an explanation. To terminate connections for specific clients, use “tnkill” on page 136. Use “tnstart” on page 142 to restart the server.

Location

TNHOME/usr/sbin

Usage

```
tnshut [-f] [-r realm] [-t type] [-s service] [minutes [reason...]]  
tnshut -C [-r realm] [-t type] [-s service]  
tnshut [minutes [reason...]]
```

Options

- “Realm Options” on page 127

-f	Shut down all TAS realms and services immediately, without sending a message to connected clients.
-C	Cancel a shutdown in progress.
<i>minutes</i>	Specify the number of minutes before you want TAS to shut down. If you do not specify a time, minutes defaults to 0. When you specify minutes and reason, TAS accepts client connections until five minutes before shutdown.
<i>reason</i>	Indicate a brief message to send to connected service clients. The clients must have message-receipt capacity. The reason can include up to 60 characters. If the explanation includes any of the following characters, you may need to enclose it in quotes, depending on your UNIX shell: # \$ & * [' " ' ? \ ^ ! When you specify minutes and reason, TAS accepts client connections until five minutes before shutdown.

Examples

1. Use the following command to cancel a shutdown in progress:

```
tnshut -C
```

2. Use the following command to provide a time until disconnection and a short message:

```
tnshut 10 to back up system
```

3. Use the following command to shut down all TAS realms and services:

```
tnshut
```

tnstart

This command starts file, print, and transport service processes and allows client connections. The `tnstart` command performs the following steps:

1. **Determines the location and verifies the existence of the TAS and TAS home directories.**
2. **Checks the TAS file service connection database and lock file.**
3. **Starts transport daemons, such as NBUD and IPXd.**
4. **Starts TAS system level programs such as TNdiskfree, realm level daemons such as NBdaemon and NWdaemon, and realm-specific programs.**
5. **Starts services in each realm.**

If you enable the LM-NT-OS/2 realm, a short delay occurs before you can use TAS, while NBname checks the network for NetBIOS name conflicts.

Location

TNHOME/usr/sbin

Usage

```
tnstart [-r realm] [-t type] [-s service]
tnstart -B [-r realm]
tnstart -F
```

Options

- “Realm Options” on page 127

-B	Enable the base realm—the realm without the services, transports, and other options. When you use <code>-r</code> with <code>-B</code> , TAS enables the base system and the specified realm but none of the services in the realm.
-F	Refresh the system.

Note

You must restart TAS any time you restart the UNIX system.

Examples

1. **Use the following command to start TAS:**

```
tnstart
```

2. Use the following command to start the nwspock file service in the NetWare realm:

```
tnstart -r NW -s nwspock:file
```

3. Use the following command to start the base system in the LM-NT-OS/2 realm:

```
tnstart -B -r NB
```

Configuration Utilities

- “atkprobe” on page 145
- “ipxprobe” on page 146
- “tnadvert” on page 147
- “tnatalk” on page 149
- “tnattach” on page 151
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- “tnumap” on page 217
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atkprobe

This command discovers information about the AppleTalk setup on the specified network interface, including the range of valid network numbers, a list of available AppleTalk zone names, and the default zone name.

Location

TNHOME/usr/bin

Usage

`atkprobe devicename: ppa-number`

Options

<i>devicename</i>	Specify the network interface name.
<i>ppa-number</i>	Specify the Physical Point Attachment number for the Data-Link Provider Interface (DLPI). For more information, refer to the DLPI specifications.

Example

Before running `atkprobe`, you must shut down the server. Telnet to the server and use the following command to shut down TAS:

```
tnshut
```

To run `atkprobe`, you must know the device names on your AppleTalk network. To find them, use the following command.

```
netstat -i
```

If `netstat -i` returns the network name `le0`, for example, you must enter the AppleTalk interface `/dev/le:0` for the device variable. To display the configuration information on `/dev/le:0`, enter the following command:

```
atkprobe /dev/le:0
```

Information on the specified AppleTalk transport interface, such as network range, default AppleTalk zone name, and a list of available AppleTalk zones, appears.

Sample Output:

/dev/le:0	net-range	1000-1100
/dev/le:0	default-zone	MONOPOLY
/dev/le:0	zonelist	MONOPOLY MERCURY MELANCHOLY

Use the following command to restart the server:

```
tnstart
```

ipxprobe

This command discovers information about the IPX/SPX frame type and associated network numbers in use on the specified network interface.

Location

TNHOME/usr/bin

Usage

`ipxprobe devicename: ppa-number`

Options

<i>devicename</i>	Specify the network interface name.
<i>ppa-number</i>	Specify the Physical Point Attachment number for the Data-Link Provider Interface (DLPI). For more information, refer to the DLPI specifications.

Example

Before running `ipxprobe` from the command line, you must shut down the server. Telnet to the server and use the following command to shut down TAS:

```
tnshut
```

To run `ipxprobe`, you must know the device names on your NetWare network. To find them, use the following command:

```
netstat -i
```

If `netstat -i` returns the network name `le0`, for example, you must enter the AppleTalk interface `/dev/le:0` for the device variable. To display the configuration information on `/dev/le:0`, enter the following command:

```
ipxprobe /dev/le:0
```

Information on the specified NetWare transport interface, such as frame types and IPX network numbers, appears.

Sample Output:

<code>/dev/hme:0</code>	<code>ethernet_ii</code>	<code>00000100</code>
<code>/dev/hme:0</code>	<code>ethernet_802.3</code>	<code>00000101</code>
<code>/dev/hme:0</code>	<code>ethernet_802.2</code>	<code>00000102</code>
<code>/dev/hme:0</code>	<code>ethernet_snap</code>	<code>00000103</code>

Use the following command to restart the server:

```
tnstart
```

tnadvert

This command gives you the ability to manage transport advertisements for the IPX/SPX transport. You can list, read the attribute values of, create, modify, and delete advertisements.

For special cases, the IPX/SPX transport `tnipx` allows you to specify a static set of services for the IPX Service Advertisement Protocol (SAP) to advertise, regardless of whether you have enabled or disabled the NetWare realm.

Advertisement names, similar to service names, consist of two parts separated by a colon (:). A valid service name for the NetWare realm precedes the colon. A

hexadecimal number—made up of digits and lowercase letters a through f, with no leading zeroes—that specifies the physical service type follows the colon. It has the same meaning as the `type` attribute of a service type object (see “`tnstype`” on page 197“`tnstype`”).

Location

`TNHOME/usr/sbin`

Usage

```
tnadvert -L [-n transport]  
tnadvert [-R [-n transport [-d service:type  
  [{-a attribute=value}]]]]  
tnadvert [(-A|-M) -n transport -d service:type  
  {-a attribute=value}]  
tnadvert [-D -n transport -d service:type]
```

Options

- “General Configuration Options” on page 127

<code>-n <i>transport</i></code>	Specify the IPX/SPX transport.
<code>-d <i>service:type</i></code>	Specify the advertisement.

Attribute

fixed-socket

This attribute designates the fixed-socket number for a service. It sets the IPX socket number for the service types requested. The value for `fixed-socket` consists of a hexadecimal number up to four digits long. It defaults to 0. Any other indicated value represents a protocol-dependent numeric socket designation.

Usage:

```
tnadvert -M -n transport -d service:type -a fixed-socket=number
```

Examples

1. Use one of the following commands to list all available advertisements for the `tnipx transport`:


```
tnadvert
tnadvert -L
tnadvert -L -n tnipx
```

2. Use the following command to list the value of the `fixed-socket` attribute for the `tnipx` transport and advertisement `service1:4`:

```
tnadvert -R -n tnipx -d service1:4 -a fixed-socket
```

3. Use the following command to modify the value of the `fixed-socket` attribute of the `newservice:4` advertisement of the `tnipx` transport by changing it to `0x20`:

```
tnadvert -M -n tnipx -d newservice:4 -a fixed-socket=0x20
```

4. Use the following command to delete the `tnipx` advertisement `newservice:4`:

```
tnadvert -D -n tnipx -d newservice:4
```

tnatalk

This command gives you the ability to manage AppleTalk maps. You can list, read attribute values of, create, modify, and delete AppleTalk maps.

An AppleTalk map, defined at the system level, represents a set of associations between Macintosh-style file attributes and UNIX file attributes. More than one file service can reference each AppleTalk map. You can define suffixes for each AppleTalk map (see “`tnsuffix`” on page 200).

Location

`TNHOME/usr/sbin`

Usage

```
tnatalk [-L]
tnatalk [-R [-m atmap {-a attribute}] ]
tnatalk [(-A|-M) -m atmap {-a attribute=value} ]
tnatalk [-D -m atmap]
```

Options

- “General Configuration Options” on page 127

<code>-m <i>atmap</i></code>	Specify the name of the AppleTalk map.
------------------------------	--

Note

You cannot delete an AppleTalk map from the system if a volume references it.

Attribute

template-only

This attribute creates the template. If you set it to on, the corresponding map becomes a template that does not affect the runtime behavior of the system.

Usage:

```
tnatalk -M -m atmap -a template-only={on|off}
```

Examples

1. Use one of the following commands to list all available AppleTalk maps:

```
tnatalk
tnatalk -L
```

2. Use the following command to list the value of the `template-only` attribute of the AppleTalk map `atblark`:

```
tnatalk -R -m atblark -a template-only
```

3. Use the following command to change the `template-only` attribute value of the AppleTalk map `atblark` to on:

```
tnatalk -M -m atblark -a template-only=on
```

4. Use the following command to delete AppleTalk map `atblark`:

```
tnatalk -D -m atblark
```

tnattach

This command manages attach points to file services. You can list, read attribute values of, create, modify, and delete attach points. Attach points, aliases specified for internal directories in volumes, appear to users the same as volumes.

Location

TNHOME/usr/sbin

Usage

```
tnattach [-L [-r realm] [-s service]]
tnattach [-R [-r realm] [-s service] [-j attach-point]
         [-a attribute]]]]]
tnattach [(-A|-M) -r realm -s service -j attach-point
         {-a attribute=value}]
tnattach [-D -r realm -s service -j attach-point]
```

Options

- “Realm Options” on page 127
- “General Configuration Options” on page 127

<code>-j <i>attach-point</i></code>	Specify an attach point.
-------------------------------------	--------------------------

Attributes

- “path” on page 152

- “volume” on page 152

path

This attribute designates the relative path to the volume.

Usage:

```
tnattach -M -r realm -s service -j attach-point -a path=pathname
```

volume

This attribute designates the volume within which the attach point resides.

Usage:

```
tnattach -M -r realm -s service -j attach-point -a volume=volumename
```

Examples

1. Use one of the following commands to list available attach points:

```
tnattach
tnattach -L
```

2. Use the following command to list available attach points for file service *myhost* in the LM-NT-OS/2 realm:

```
tnattach -R -r NB -s myhost:file
```

3. Use the following command to read the value of the attribute *volume* for the attach point *mybin* in the file service *myhost* in the NetWare realm:

```
tnattach -R -r NW -s myhost:file -j mybin -a volume
```

4. Use the following command to create a new attach point *mybin* in the file service *myhost* in the AppleTalk realm:

```
tnattach -A -r AT -s atmyhost:file -j mybin
-a volume=myvol -a path=/export/home
```

5. Use the following command to change the value of the attribute `volume` of attach point `mybin` in the file service `myhost` in the AppleTalk realm, to `home`:

```
tnattach -M -r AT -s atmyhost:file -j mybin
-a volume=home
```

6. Use the following command to delete the attach point `mybin` from the file service `myhost` in the LM-NT-OS/2 realm:

```
tnattach -D -r NB -s myhost:file -j mybin
```

tniface

This command gives you the ability to manage transport interfaces. You can list, read attribute values of, create, modify, and delete transport interfaces. Transports contain sets of network interfaces over which they operate.

Location

TNHOME/usr/sbin

Usage

```
tniface [-L [-n transport]]
tniface [-R [-n transport [-i interface [{-a attribute}]]]
tniface [(-A|-M) -n transport -i interface
{-a attribute=value}]
tniface [-D -n transport -i interface]
```

Options

- “Realm Options” on page 127

<code>-n <i>transport</i></code>	Specify the transport.
<code>-i <i>interface</i></code>	Specify the interface.

Attributes

General attributes:

- “address” on page 154
- “broadcast” on page 155
- “netmask” on page 155

Attributes specific to the `tnipx` transport interface:

- “device” on page 155
- “frame-type” on page 155
- “mtusize” on page 155
- “net-number” on page 156

Attributes specific to the `tnatk` transport interface:

- “checksum” on page 158
- “default-zone” on page 158
- “device” on page 158
- “net-range” on page 158
- “zonelist” on page 158

Attribute specific to the `tnnbu` transport interface:

- “device” on page 159“device

address

This attribute specifies the IP address, in dot notation, to associate with the transport interface. Separate multiple addresses with spaces.

Usage:

```
tniface -M -n transport -i interface -a address=IP-address
```

broadcast

This attribute designates the IP broadcast address, in dot notation, to associate with the transport interface.

Usage:

```
tniface -M -n transport -i interface -a broadcast=IP-address
```

netmask

This attribute designates the subnet mask, in dot notation, to associate with the transport interface.

Usage:

```
tniface -M -n transport -i interface -a netmask=IP-address
```

device

This attribute designates the device name for the transport interface. For example, the following serves as the device name for the Solaris system: `/dev/le:0`.

Usage:

```
tniface -M -n transport -i interface -a device=devicename
```

frame-type

This attribute designates the NetWare frame type.

Usage:

```
tniface -M -n transport -i interface -a frame-type=frametype
```

mtusize

This attribute designates the maximum transfer unit size. Do not change this attribute from the default.

Usage:

```
tniface -M -n transport -i interface -a mtusize=size
```

net-number

This attribute designates the IPX network number. To find the network number for the NetWare realm, refer to the instructions below for your NetWare server's version.

NetWare 4.x Server

1. At the server console, enter the following at the colon (:) prompt:

```
load install
```

2. On the menu that appears, select **Maintenance/Selective Install**.
3. Press **m**.
4. Press **Enter**.
5. Select **NCF Files Options**.
6. Press **n**.
7. Press **Enter**.
8. Use a text editor to open `AUTOEXEC.NCF`.
9. Go to the section called `bind IPX`. If you find more than one `bind IPX` section, find the one that refers to the **Ethernet frame type on that system**.
10. On that line, note the value used for `net=nnn`, where `nnn` represents the hexadecimal network number up to eight digits long.
11. Write down the number.
12. Exit the program by pressing the **Esc** button three times and then **Enter**.

NetWare 3.x Server

1. At the server console, enter the following at the colon (:) prompt:

```
load install
```

2. On the menu that appears, select **System Options**.

3. Press **s**.
4. Press **Enter**.
5. Select `AUTOEXEC.NCF`.
6. Press **e**.
7. Press **Enter**.
8. Go to the section called `bind IPX`. If you find more than one `bind IPX` section, find the one that refers to the Ethernet frame type on that system.
9. On that line, note the value used for `net=nnn`, where `nnn` represents the hexadecimal network number up to eight digits long.
10. Write down the number.
11. Exit the program by pressing the **Esc** button three times and then **Enter**.

NetWare 2.x Server

1. At a NetWare client PC, log in to the `PLS` as any user:

```
login servername/username
```

2. Start the system configuration program:

```
syscon
```

3. On the menu that appears, select **File Server Information**.
4. Press **F**.
5. Press **Enter**.
6. Select the `PLS` from the list of Known NetWare Servers.
7. Press the down arrow until you highlight the server name
8. Press **Enter**. The file server information appears, including the hexadecimal network number up to eight digits long.

9. Write down the number.

10. Exit the program by pressing the Esc button three times and then Enter.

Usage:

```
tniface -M -n transport -i interface -a net-number=network-number
```

checksum

This attribute designates the DDP checksum control. You can set DDP checksums on or off. This release of TAS does not implement this attribute.

Usage:

```
tniface -M -n transport -i interface -a checksum={on|off}
```

default-zone

This attribute designates the default AppleTalk zone in the zone list.

Usage:

```
tniface -M -n transport -i interface -a default-zone=zonename
```

device

This attribute designates the device name for the transport interface.

Usage:

```
tniface -M -n transport -i interface -a device=devicename
```

net-range

This attribute designates the range of network numbers.

Usage:

```
tniface -M -n transport -i interface -a net-range=network-range
```

zonelist

This attribute designates the list of AppleTalk zones available for the system.

Usage:

```
tniface -M -n transport -i interface -a zonelist=list
```

device

This attribute designates the device name for the specified transport interface.

Usage:

```
tniface -M -n transport -i interface -a device=devicename
```

Examples

1. Use one of the following commands to list all available transport interfaces:

```
tniface  
tniface -L
```

Sample Output:

```
tcpip  
204.242.9.83  
  
tnipx  
internal  
le0:ethernet_ii  
le0:ethernet_802.3  
le0:ethernet_802.2  
le0:ethernet_snap  
  
tnnbu  
le0  
  
tnatk  
le0
```

2. Use the following command to list all transport interface information, including the values of all defined attributes:

```
tniface -R
```

3. Use the following command to list the value of the attribute `device` for the interface `iee0:ethernet_802.3` in a `tnipx` section:

```
tniface -R -n tnipx -i iee0:ethernet_802.3 -a device
```

4. Use the following command to change the value of the attribute `address` for the interface `202.224.6.124` in a `tcpip` section to `204.242.8.167`:

```
tniface -M -n tcpip -i 202.224.6.124 -a address=204.242.8.167
```

5. Use the following command to delete the interface `le:1` from a `tnipx` section:

```
tniface -D -n tnipx -i le:1
```

tnnetmgr

This command allows you manage net managers added to specified realms. It can perform the following functions: list, read the attribute values of, create, modify, and delete net managers.

Net managers monitor the hub ability of the realm. Each net manager for the realm receives Simple Network Management Protocol (SNMP) traps whenever you enable or disable the realm.

Location

`TNHOME/usr/sbin`

Usage

```
tnnetmgr [-L [-r realm]]
tnnetmgr [-R [-r realm [-g net-manager [{-a attribute}]]]]
tnnetmgr [(-A|-M) -r realm -g net-manager
{-a attribute=value}]
```

```
tnnetmgr [-D -r realm -g net-manager]
```

Options

- “Realm Options” on page 127
- “General Configuration Options” on page 127

<code>-g <i>net-manager</i></code>	Specify the net manager.
------------------------------------	--------------------------

Attributes

- “address” on page 161
- “community” on page 161

address

This attribute designates the net manager’s IP address. SNMP traps should go to this address.

Usage:

```
tnnetmgr -M -r realm -g net-manager -a address=IP-address
```

community

This attribute designates the name of the community to which the net manager and the agent belong.

Usage:

```
tnnetmgr -M -r realm -g net-manager -a community=name
```

Examples

1. Use one of the following commands to list all available net managers for all installed realms:

<pre>tnnetmgr tnnetmgr -L</pre>

Sample Output:

```
NB
    boxx-SNMP
    SNMP1
NW
    SNMP6
AT
    starz-SNMP
```

- 2. Use the following command to list all attribute values for the net manager starz-SNMP in the NetWare realm:**

```
tnnetmgr -R -r NW -g starz-SNMP
```

Sample Output:

```
address=204.222.67.08
community=nbset
```

- 3. Use the following command to add the values of the attributes address and community for the net manager SNMP6 in the LM-NT-OS/2 realm:**

```
tnnetmgr -A -r NB -g SNMP6 -a address=204.242.58.23
-a community=Cisco
```

- 4. Use the following command to delete the net manager boxx-SNMP from the LM-NT-OS/2 realm:**

```
tnnetmgr -D -r NB -g boxx-SNMP
```

tnpref

This command allows you to manage printer references made to file services. It performs the following functions: list, read the attribute values of, create, and delete printer references.

Within TAS, each file service has a list of printers it exports. Since any number of distinct file services for distinct realms can export the same printer name, exported printers receive a list of printer references. The real printers and attributes have system-level definition (see “tnprinter” on page 165). AppleTalk file services do not use printer references, because AppleTalk uses independently configured print services.

Location

TNHOME/usr/sbin

Usage

```
tnpref [-L [-r realm [-s service]]]  
tnpref [(-A|-D) [-r realm [-s service [-p printer]]]]
```

Options

- “Realm Options” on page 127
- “General Configuration Options” on page 127

<code>-p <i>printer</i></code>	Specify a printer name.
--------------------------------	-------------------------

Examples

1. Use either of the following commands to list all available printer references for all file services in all realms:

```
tnpref  
tnpref -L
```

Sample Output:

NB

Impac:file

blahprn

Impacman:tty:term

blark:file

NW

nwmyhost:file

lhpprn

blahprn

nwmyhost:term

nwmyhost:nvt

2. Use the following command to list all printer references for the file service test in the NetWare realm:

```
tnpref -L -r NW -s test:file
```

Sample Output:

```
lhpprn  
blahprn
```

3. Use the following command to add the printer hpprn to the LM-NT-OS/2 realm file service myhost:

```
tnpref -A r NB -s myhost:file -p hpprn
```

4. Use the following command to delete the printer reference hpprn from the file service nwmyhost in the NetWare realm:

```
tnpref -D -r NW -s nwmyhost:file -p hpprn
```

tnprinter

This command manages printers in the TAS system. A printer, initially created as a system object, does not become available until a file service references it. Consequently, you must perform two operations to reference a printer: add a printer as a system object and reference a printer. This command lists, reads, adds, modifies, and deletes TAS printer configuration options.

You must reference printers from file services to allow connections to those services. A single file service may reference any number of printers. You must define printer names in lower case.

Because each TotalNET realm has its own case-mapping scheme, the naming conventions allow volume names to conform to the style of individual realm; however, one realm may allow a printer name that another realm does not.

Printers have three naming schemes:

- Each realm has its own set of characters for use in printer names. They do not include the null character ('`\0`'), upper case characters, and any other characters forbidden by the realm.
- All printer names must have at least one character, and at least one realm must allow all the characters in a name.
- Clients cannot access a printer with forbidden characters for a their realms. To make a printer accessible in all realms, you must create its name only from characters that all realms allow.

Location

`TNHOME/usr/sbin`

Usage

```
tnprinter [-L]
tnprinter [-R [-p printer [{-a attribute=value}]]]
tnprinter [(-A|-M) -p printer {-a attribute=value}]
tnprinter [-D -p printer]
```

Options

- “Realm Options” on page 127
- “Realm Options” on page 127

<code>-p printer</code>	Specify a printer.
-------------------------	--------------------

Note

You cannot delete a printer from the system if a service references it.

Attributes

- “atalk-device-name” on page 166
- “description” on page 166
- “queue” on page 166
- “share-access” on page 167
- “share-passwd” on page 167
- “spooler-options” on page 167
- “template-only” on page 167

atalk-device-name

This attribute designates the printer’s AppleTalk entity name. If defined, this attribute overrides the `spooler` and `queue` attributes defined under the system for the printer object. You must have the AppleTalk transports running, and the printer name must exist in the AppleTalk network.

Usage:

```
tnprinter -M -p printer -a atalk-device-name=name
```

description

This attribute designates a description of the printer. This attribute has no default.

Usage:

```
tnprinter -M -p printer -a description=string
```

queue

This attribute designates the UNIX queue name associated with the printer.

Usage:

```
tnprinter -M -p printer -a queue=queuename
```

share-access

This LM-NT-OS/2 realm attribute designates the printer mode, of value on or off. If you set this attribute to on, clients can access the printer through NB file services using share-level and user-level security. In this case, you can set a share password for the printer. If you set this attribute to off, clients can only access the printer through an NB file service using user-level security.

Usage:

```
tnprinter -M -p printer -a share-access={on|off}
```

share-passwd

This LM-NT-OS/2 realm attribute designates the share password for the printer. This attribute applies only if you set `share-access` to on. Use a plain-text string for the share password. If you do not specify this option, or if the string has no value, clients can access the printer without passwords through the NetBIOS file services using share-mode security.

Usage:

```
tnprinter -M -p printer -a share-passwd=password-string
```

spooler-options

This attribute designates options to pass to the UNIX printer spooler, such as `lp`.

Usage:

```
tnprinter -M -p printer -a spooler-options=option-strings
```

template-only

An attribute that, if set to on, causes the volume to behave only as a template, with no effect on TotalNET system performance.

Examples

1. Use one of the following commands to list all printers defined at the system level:

```
tnprinter
tnprinter -L
```

2. Use the following command to list the value of printer attribute `queue` for printer `blahprn`:

```
tnprinter -R -p blahprn -a queue
```

3. Use the following command to change the value of the `share-access` attribute for the printer `macprn` to `on`:

```
tnprinter -M -p macprn -a share-access=on
```

4. Use the following command to delete the printer `blahprn` as a printer option in the system:

```
tnprinter -D -p blahprn
```

tnrealm

This command lists, reads, modifies, creates, and deletes TAS realms and realm configuration options. The TAS environment consists of collections of services provided over specified transports in three realms:

- LM-NT-OS/2 (NB) realm
- NetWare (NW) realm
- AppleTalk (AT) realm

Location

`TNHOME/usr/sbin`

Usage

```
tnrealm -L
tnrealm -R -r realm {-a attribute}
tnrealm (-A|-M) -r realm {-a attribute=value}
tnrealm -D -r realm
```

Options

- “Realm Options” on page 127
- “General Configuration Options” on page 127

Attributes

Attribute applicable to all realms:

-

Attributes applicable to the LM-NT-OS/2 realm:

- “anninterval” on page 169
- “lm-domain” on page 170
- “wins-servers” on page 170
- “win95-logon-script-dflt” on page 170

Attribute applicable to the NetWare realm:

- “bindery-load” on page 170

transport

This attribute designates the name of the transport protocol for the specified realm. Separate transport names with commas. Available transports consist of `tcpip` and `tnnbu` for the LM-NT-OS/2 realm, `tnipx` for the NetWare realm, and `tnatk` for the AppleTalk realm.

Usage:

```
tnrealm -M -r realm -a transport={tcpip|tnnbu|tnipx|tnatk}
```

anninterval

This attribute designates the time interval in seconds between service announcements. This attribute defaults to 300—one broadcast every 5 minutes.

Usage:

```
tnrealm -M -r realm -a anninterval=seconds
```

lm-domain

This attribute designates the NetBIOS name for a LM-NT-OS/2 domain. Unless you set up clients to use a different name, use WORKGROUP as the value for this attribute.

Usage:

```
tnrealm -M -r NB -a lm-domain=domain-name
```

wins-servers

This attribute designates the list of IP addresses of WINS servers. For servers that use this attribute, each newly-claimed NetBIOS name registers with the WINS system by calling each server in turn, until it contacts one.

Usage:

```
tnrealm -M -r realm -a wins-servers=value
```

win95-logon-script-dflt

This attribute designates the name of a default logon script supplied to Windows-95 clients during the login process and serves as the default for users not known to the server and for known users who have a missing or null win95-logon-script attribute.

Usage:

```
tnrealm -M -r realm -a win95-login-script-dflt=value
```

bindery-load

This attribute pre-loads user names into the NetWare bindery. Specifying ALL instead of a list of user names causes all UNIX user names to pre-load.

Usage:

```
tnrealm -M -r NW -a bindery-load={username|ALL}
```

Examples

1. Use either of the following commands to list all available realms:

```
tnrealm  
tnrealm -L
```

Sample Output:

```
NB  
NW  
AT
```

2. Use the following command to list all available realms and their attribute values:

```
tnrealm -R
```

Sample Output:

```
NB  
  
        transport=tcip, tmbu  
        lm-domain=langroup  
        anninterval=300  
        state=enabled  
  
NW  
  
        transport=tnipx  
        bindery-load=all  
        state=enabled  
  
AT
```

transport=tnatk

state=enabled

3. Use the following command to modify the announcement interval in the LM-NT-OS/2 realm:

```
tnrealm -M -r NB -a anninterval=600
```

4. Use the following command to delete the AppleTalk realm from the system:

```
tnrealm -D -r AT
```

tnroute

This command allows you to configure static routes for the tnipx transport. You can list, read the attribute values of, create, modify, and delete static routes. Only the IPX/SPX (tnipx) transport offers the capability to specify a set of static routes that supplement the routes determined through the transport's dynamic routing protocols.

Location

TNHOME/usr/sbin

Usage

```
tnroute [-L -n transport]  
tnroute [-R [-n transport [-o route [{-a attribute}]]]]  
tnroute [(-A|-M) -n transport -o route {-a attribute=value}  
tnroute [-D -n transport -o route]
```

Options

- “General Configuration Options” on page 127

<code>-n transport</code>	Specify a transport section.
<code>-o route</code>	Specify a static route to configure.

Attribute

gateway

This attribute designates the router address for reaching the target IPX network address.

Usage:

```
tnroute -M -n transport -o route -a gateway=gateway-address
```

Examples

1. Use one of the following commands to list all available static routes for the `tnipx` transport:

```
tnroute
tnroute -L
tnroute -L -n tnipx
```

Sample Output:

```
ccf2080f
```

2. Use the following command to list the value of attribute `gateway` for static route `ccf2080f`:

```
tnroute -R -n tnipx -o ccf2080f -a gateway
```

3. Use the following command to add the value of the `gateway` attribute at address `00000101:0000a517810` for static route `ccf2080f`:

```
tnroute -A -n tnipx -o ccf2080f -a gateway=00000101:0000a517810
```

4. Use the following command to delete the static route `ccf2080f`:

```
tnroute -D -n tnpx -o ccf2080f
```

tnservice

This command lists, adds, modifies, and deletes TAS service configuration options. The TAS environment includes file, printer, terminal, and NVT services. TAS provides services for each supported realm over each realm's transport protocols, unless restricted by the `transport` attribute of the service:

- LM-NT-OS/2 realm: file and term services
- NetWare realm: file, term, and NVT services
- AppleTalk realm: file and print services

Services share resources to clients. Each consists of a proper service name, a colon, and a service type string (`file`, `term` or `nvt`) and uses the following format:

```
servicename:servicetype
```

A system may have any number of services defined in each of its supported realms and service types. Each service consists of numerous attributes, volume references, printer references, attach points, and client contexts.

Location

```
TNHOME/usr/sbin
```

Usage

```
tnservice [-L [-r realm]]  
tnservice [-R [-r realm [-s service [{-a attribute}]]]  
tnservice [(-A|-M) -r realm -s service {-a attribute=value}]  
tnservice [-D -r realm -s service]
```

Options

- “Realm Options” on page 127
- “General Configuration Options” on page 127

Attributes

Attributes for all services:

- “aliases” on page 176
- “command” on page 177
- “description” on page 177
- “home” on page 177
- “persistent” on page 177
- “plex” on page 177
- “template-only” on page 178
- “transport” on page 178
- “umask” on page 178
- “user” on page 180

Attributes for file services:

- “activity” on page 180
- “attdefault” on page 180
- “authent-proxy” on page 180
- “browse-election-bias” on page 181
- “browse-election-version” on page 181
- “browse-master” on page 182
- “browse-user” on page 182
- “cachesize” on page 182
- “chpass” on page 182
- “client-charset” on page 183
- “client-encryption” on page 183
- “commandpath” on page 183
- “db-update-interval” on page 184
- “dce-authentication” on page 184
- “dfreport” on page 184
- “guest” on page 185
- “keepalive” on page 185
- “lm-announce” on page 185
- “login-control” on page 185
- “machine” on page 186

- “max-conns” on page 186
- “netiosize” on page 186
- “nice” on page 186
- “no-login” on page 187
- “null-group” on page 187
- “null-passwd-login” on page 187
- “openfiles” on page 187
- “packet-burst” on page 188
- “passwdage” on page 188
- “prdefault” on page 188
- “prelip-rpktsize” on page 188
- “preserve-whitespace” on page 189
- “restrictdcm” on page 189
- “savepass” on page 189
- “searchcount” on page 189
- “share-mode” on page 189
- “share-user” on page 190
- “smb-protocol-level ” on page 190
- “spooldir” on page 190
- “trace” on page 190
- “user-map” on page 191
- “windows95-logon ” on page 191

aliases

This attribute designates a list of service names that alias the given service in the LM-NT-OS/2 realm. Clients access the service through the aliases and the base name. Aliases must adhere to all the rules for legal service names in the realm and have the same service type as the base service. Each service name and alias can occur only once in the network. An alias name must not conflict with any service name or any other alias of any service. This facility can define a single LM-NT-OS/2 file service available under an ordinary name and as the default CIFS service—the one accessed when the client specifies an IP address instead of a DNS name. Do this by specifying the alias `*smbserver:file` for the service.

Usage:

```
tnservice -M -r realm -s service -a aliases=value
```

command

This attribute designates the UNIX command line to execute when a client makes a connection to the defined service. The UNIX shell does not interpret the command, so you cannot use shell services like quoting, wildcards, and redirection. You may include any valid parameters for the UNIX command.

Usage:

```
tnservice -M -r realm -s service -a command=UNIX-command
```

description

This attribute designates a textual description of the service. No default exists. You may need to enclose text in quotes.

Usage:

```
tnservice -M -r realm -s service a description=string
```

home

This attribute designates the full, absolute path to the home directory of the service. Use this option only when you need to have the service's working directory differ from the realm's home directory.

Usage:

```
tnservice -M -r realm -s service -a home=path
```

persistent

This attribute designates the service control. If you mark a service as "persistent", the service starts when you enable it and runs autonomously thereafter. Non-persistent services start with each incoming connection. The NetWare realm can have persistent file or NVT services.

Usage:

```
tnservice -M -r realm -s service -a persistent={on|off}
```

plex

This attribute controls whether the network claims an LM-NT-OS/2 service name as a "unique" or "group" NetBIOS name. It defaults to `unique`, so the service name

that this file defines occurs only once on the network. Specifying `group` indicates that other NetBIOS services of the same name may exist on the network.

Usage:

```
tnservice -M -r realm -s service -a plex={unique|group}
```

template-only

This attribute creates a template. If you mark an object as a template by setting this attribute to `on`, the system treats the object as a real object, but it has no effect on the system's runtime behavior. During installation, TAS creates templates with conventional names that reflect the objects. Templates define default values for the creation of new objects. When you set this attribute to `off`, the object becomes real.

Usage:

```
tnservice -M -r realm -s service -a template-only={on|off}
```

transport

This attribute designates the possible protocol stacks for the service. No default exists. LM-NT-OS/2 realm services use the `tcpip` and `tnnbu` transports. NetWare realm services use the `tnipx` transport. AppleTalk realm services use the `tnatk` transport.

Usage:

```
tnservice -M -r realm -s service -a transport={tcpip|tnnbu|tnipx|tnatk}
```

umask

This attribute sets the file-creation mode mask for the service. Umask, a three-digit octal-number, represents the UNIX file-creation mode mask to use. It defines the access restrictions, called "permissions", to set for files and directories. The permissions define which users can read, write, and execute/access files or directories. The first digit of the octal-number indicates permissions for the owner of the file or directory. The second digit indicates permissions for users with the same group ID as the file's owner. The third digit sets permissions for the rest of the network's users.

You can define permissions by taking the values for the permissions you want to deny and adding them to 0. The value 7 denies all access rights, and the value 0 grants all access rights. The "read" permission has a value of 4, "write" has a value of 2, and "execute" has a value of 1—for directories, this equates to the "search" permission. The umask defaults to 077, indicating full permissions for the user and no permissions for anyone else.

The following table lists permission configurations:

Umask Number	File Permission	Directory Permission
0	rw-	rwx
1	rw-	rw-
2	r-	r-x
3	r-	r-
4	-w-	-wx
5	-w-	-w-
6	---	-x
7	---	---

For example, you might use the following directory permission for the umask:

Umask Number	File Permission	Directory Permission
033	-rwxr-r-	drwxr-r-

In this case, the owner can read, write, and execute files in that directory; the group can only read files in the directory; and everyone else can only read files in the directory.

DOS and Macintosh operating systems do not distinguish between reading and executing a file, so these systems ignore the “execute” permission. For directories, it still means “search” permission. If other DOS or Macintosh users need to run programs owned by the user, they need to have “read” permission. The Macintosh operating system determines the protection setting for new file folders.

You can set the umask for specific volumes by using the umask option of the volume command for that volume. For more information on the UNIX file-creation mode mask, refer to the UNIX man pages for `umask` and `chmod`.

Usage:

```
tnservice -M -r realm -s service -a umask=octal-number
```

user

This attribute designates the UNIX user identity you should assume when you execute the UNIX command line given in the command for the service. This attribute defaults to root. In addition to inheriting the specified user identity, the server process also inherits the appropriate group list for the specified user name.

Usage:

```
tnservice -M -r realm -s service -a user=username
```

activity

This attribute controls activity logging. It specifies whether the file service maintains an activity log. It defaults to `off`—no log. If set to `on`, this attribute causes the file service to record connection activity statistics in the activity log file that resides in the TotalNET home directory. This attribute applies only to file services.

Usage:

```
tnservice -M -r realm -s service -a activity={on|off}
```

attdefault

This attribute designates the default attach point for redirected drives in LM-NT-OS/2 file services. When a client redirects a drive to the defined file service without specifying a volume or an attach point, this attribute defines the default attach point. If you do not specify a default attach point, this attribute defaults to the first volume referenced in the file service configuration sections for the service to which the client connects. You can override this attribute by assigning a default attach point to a user's configuration file.

Usage:

```
tnservice -M -r realm -s service  
-a attdefault={volumename|attachname}
```

authent-proxy

This attribute designates a list of proxy servers that can authenticate users for TAS in the LM-NT-OS/2 and NetWare realms. If you configure this attribute, all login requests go to the proxy for processing. A user receives resource access if the proxy server returns valid authentication, as long as the user name has validity on the host server as well. By default, the user's server authenticates logins.

The proxy does not need to reside on the same host or serve as a TAS service; however, the proxy should belong to the realm of the TAS host. For example, you

should specify an SMB server to authenticate passwords for the LM-NT-OS/2 realm, a Novell NetWare server to authenticate passwords for the NetWare realm, and so on.

For this attribute, the *service* variable represents the name of the proxy service on another TAS host authenticating passwords. The service must have the same native protocol as the service for which it provides password authentication. If the service does not reside on a TAS host, then *service* represents the machine name for the service. For example, if the service resides on a TAS host server called *server1*, you would set up this service as an authentication proxy using the following command:

```
tnservice -A -r realm -s service -a authent-proxy=server1:file
```

You should always designate *file* as the service type for *authent-proxy*. This attribute does not work you set the value of *share-mode* to *on*. The *client-encryption* attribute does not work when you set *authent-proxy*, because session setups forward to the proxy server and incur local disregard.

Usage:

```
tnservice -M -r realm -s service -a authent-proxy=servername:service-type
```

browse-election-bias

This attribute determines how hard the service should attempt to win the browse-master election in the LM-NT-OS/2 realm. It must have a value from 0 to 255. A value of 255 causes the service to try as hard as possible to win the election. A value of 0 prevents the service from participating in browse elections. Default values for potential browse-masters reflect the operating system of the host, as follows:

- Windows for Workgroups: 1
- Windows 95: 1
- NT Workstation: 16
- NT Server: 32

Usage:

```
tnservice -M -r realm -s service -a browse-election-bias=0-255
```

browse-election-version

This attribute tunes browser elections in the LM-NT-OS/2 realm, along with the *browse-election-bias* attribute. It must have a value from 0 to 65536. TAS uses this parameter in browse master elections to decide between two hosts with the same operating system. A value of 65535 causes the service to try as hard as possible to win the election. A value of 0 prevents the service from participating in browse elections. This attribute has no effect if you set the *browse-master* attribute to *off*.

Usage:

```
tnservice -M -r realm -s service -a browse-election-version=0-65535
```

browse-master

This attribute determines whether this service should participate in elections and attempt to become a browse master in the LM-NT-OS/2 realm. If you set this attribute to `off`, the service does not attempt to become browse master for its network segment. If you set this attribute to `on`, the service attempts to become browse master for its segment. If you set this attribute to `domain`, the service becomes the domain browse master; this means that it becomes browse master for its network segment by means of rigged elections. You may only configure one service in a domain as the domain browse master. This includes file services from all vendors, not just TotalNET file services. This attribute defaults to `off`.

Usage:

```
tnservice -M -r realm -s service -a browse-master={on|off|domain}
```

browse-user

This attribute designates the UNIX user identity for LM-NT-OS/2 realm clients who log in solely for browsing. This attribute defaults to the TotalNET administrator, the `admin-user` attribute of the system object, which prevents clients from logging in. This attribute has no effect if you set the `browse-master` attribute to `off`.

Usage:

```
tnservice -M [-r realm][-s service] a browse-user=username
```

cachesize

This attribute specifies the number of entries that the directory cache should maintain for the defined LM-NT-OS/2 file service. It defaults to 5.

Usage:

```
tnservice -M -r NB -s service -a cachesize=size
```

chpass

This attribute specifies whether clients can change their passwords through the AppleTalk file service. It defaults to `off`.

Usage:

```
tnservice -M -r AT -s service -a chpass={on|off}
```

client-charset

This attribute designates the name of the character set used by clients of the service. If you do not specify this, the file service process chooses a default based on the realm and the negotiated properties of the client.

Usage:

```
tnservice -M -r realm -s service -a client-charset=name
```

client-encryption

This attribute specifies whether the defined file service accepts encrypted client passwords. It defaults to `off`. If you leave this attribute off, TAS expects clear-text passwords. If you set this attribute to `on`, TAS uses password files on its host. Passwords sent by clients receive encryption according to the method appropriate to that realm. You can add passwords to the TotalNET password database using `tnpasswd`. TAS ignores this attribute if you define `authent-proxy`.

Usage:

```
tnservice -M -r realm -s service -a client-encryption={on|off}
```

clienttime

This attribute specifies whether TAS honors the client time stamp values as file modification times in the LM-NT-OS/2 and AppleTalk realms. This attribute defaults to `off`, so TAS uses the server's system time to set file modification time stamps for all files. When you set this attribute to `on`, TAS uses the client's system time. The client time setting in a user's configuration file can override this attribute.

Usage:

```
tnservice -M -r {NB|AT} -s service -a clienttime={on|off}
```

commandpath

This attribute has the same effect for remote command execution that the `PATH` environment variable has for ordinary UNIX shell commands. The path follows the form `unixdir[:unixdir]...`, where `unixdir` represents any valid directory on the server. UNIX does not check the current directory when searching for the program to execute. Enter a period (`.`) as a `unixdir` value to have the current directory checked.

When you give more than one directory, separate them with colons (:). Do not use spaces. The path can contain no more than 256 characters. This attribute defaults to `/usr/bin:/bin`. A `commandpath` attribute in a user's configuration file can override this attribute.

Usage:

```
tnservice -M -r realm -s service -a commandpath=path
```

db-update-interval

This attribute specifies the frequency of client database and resource statistics updates. It defaults to 120. If you set this attribute to 0 or a negative number, TAS never updates the database.

Usage:

```
tnservice -M -r realm -s service -a db-update-interval=seconds
```

dce-authentication

If you define this attribute, the specified file service uses DCE security rather than the native UNIX password security, such as NIS. If you define a different authentication method—for example, if you set the `client-encryption` or `share-mode` attribute to `on`, or if you define `authent-proxy`—it takes precedence over DCE security. This attribute only works when you install the TAS-DCE package. This attribute does not control the acquisition of DCE credentials. DCE-enabled host systems always acquire appropriate DCE credentials, if possible.

Usage:

```
tnservice -M -r realm -s service -a dce-authentication={on|off}
```

dfreport

This attribute specifies the method for calculating free disk space. If you set it to `all`, the default, TAS reports all free disk space on all partitions to clients. Systems that do not support the UNIX `statfs()` system call or its equivalent do not support this options. If you set this attribute to `root`, TAS reports only the free disk space on the partition in which the virtual root of the client's connection resides. A `freespace` report attribute in a user's configuration file can override this attribute.

Usage:

```
tnservice -M -r realm -s service -a dfreport={all|root}
```

guest

This attribute provides a UNIX user name for guest logins to AppleTalk realm file services.

Usage:

```
tnservice -M -r realm -s service -a guest=username
```

keepalive

This attribute enables LM-NT-OS/2 and NetWare file service connection processes to detect and close incorrectly-terminated client sessions, such as when a user turns off a client PC with a session open. You do not need to use this attribute unless the transport protocol does not provide its own keepalive function. The number variable represents the time interval, in minutes, between checks for dead connections. This attribute defaults to 0, which means the server does not use keepalives.

Usage:

```
tnservice -M -r {NB|NW} -s service -a keepalive=number
```

lm-announce

This attribute supports browsing operations by old-fashioned LM-NT-OS/2 clients that do not attempt to contact a browse master. If such clients do not exist on the network, this attribute defaults to off.

Usage:

```
tnservice -M -r NB -s service -a lm-announce={on|off}
```

login-control

This attribute defines whether a list of users can access a file service. You may enter `allow` or `deny`, followed by a list of UNIX user names separated by commas. If you define `allow`, TAS grants only the defined users access to the file service. If you define `deny`, TAS denies only the defined users access to the file service. If you define neither of these attributes, TAS grants access to all UNIX users. In the LM-NT-OS/2 realm, this attribute also has no effect if you set the `share-mode` attribute to on.

If defined, this attribute takes precedence over the `no-login` attribute. If you define both the `login-control` and `no-login` attributes for a service, which you should not do, TAS ignores the `no-login` attribute. You should use this attribute for login control of file services, since future releases will not support the `no-login` attribute.

Usage:

```
tnservice -M -r realm -s service -a login-control={allow|deny} username...
```

machine

This attribute specifies the machine type for AppleTalk “GetServerInfo” responses. The field value string describes the server’s hardware or operating system. This attribute reports a null string by default.

Usage:

```
tnservice -M -r realm -s service -a machine=string
```

max-conns

This attribute specifies the maximum number of simultaneous connections that the defined NetWare service should allow. It defaults to the licensed user limit.

Usage:

```
tnservice -M -r NW -s service -a max-conns=number
```

netiosize

This attribute restricts packet size negotiations with NetWare realm clients. By default, no restrictions occur. When you define a value for `netiosize`, that value becomes the maximum size of packets sent to the client.

Usage:

```
tnservice -M -r NW -s service -a netiosize=number
```

nice

This attribute determines the UNIX process priority for the defined service. Define a decimal integer from -20 to +19 to pass to the UNIX `nice()` system call. A positive number decreases the priority; a negative number increases it. This attribute defaults to -5, which gives the process a higher priority than the UNIX default. For example, a value to 5 causes the value to increase from the default value (-5) by a factor of 10. For more information on process priorities, see the UNIX man page for `nice`.

Usage:

```
tnservice -M -r realm -s service -a nice=number
```

no-login

If you define this attribute, TAS does not allow the listed UNIX users to connect. By default, this attribute has no definition. This attribute does not apply to LM-NT-OS/2 services with a `share-mode=on` setting.

Usage:

```
tnservice -M -r realm -s service -a no-login=username...
```

null-group

This attribute identifies a UNIX group that can replace a deleted group trustee—a user or group with special permissions regarding an entrusted file or directory—of a NetWare realm file service. By default, this attribute has no definition. If you do not identify a group trustee when you use this attribute, the file owner's UNIX group becomes the trustee.

Usage:

```
tnservice -M -r NW -s service -a null-group=groupid
```

null-passwd-login

This attribute determines whether users with “null” UNIX passwords can connect to the host through TAS using the defined file service. This attribute defaults to `off`, which denies users without passwords access to the server. You can use this attribute to provide access through a null password guest account. This attribute only applies to services with `client-encryption` set to `off`, and it does not work for share mode file services in the LM-NT-OS/2 realm. The file service checks this attribute before sending the password to an authentication proxy server, if you define `authent-proxy`.

Usage:

```
tnservice -M -r realm -s service -a null-passwd-login={on|off}
```

openfiles

This attribute specifies the maximum number of files that the TAS file service may have open simultaneously.

Usage:

```
tnservice -M -r realm -s service -a openfiles=number
```

packet-burst

This attribute specifies whether the NetWare realm file service allows packet burst mode. If you set this attribute to `off`, the NW file service does not allow packet burst mode. It defaults to `on`.

Usage:

```
tnservice -M -r realm -s service -a packet-burst={on|off}
```

passwdage

This attribute specifies whether TAS supports password aging. It only applies to systems that implement UNIX System V password aging. If you set this attribute to `on`, the system does not allow users with aged password entries. This attribute defaults to `off`, which causes TAS to ignore password aging.

Usage:

```
tnservice -M -r realm -s service -a passwdage={on|off}
```

prdefault

This attribute specifies the printer to receive print jobs by redirecting a printer port and without specifying a printer name. Define the `printername` variable as you would for a normal UNIX platform, specifying one of this file service's referenced printers. When a client connects to the server for print service with the command `net use lpt1 \\servicename [username password]`, TAS routes the print jobs to `printername` at `servername`. A default printer attribute in a user's configuration file can override this attribute.

Usage:

```
tnservice -M -r realm -s service -a prdefault=printername
```

prelip-rpktsize

This attribute designates the packet size restrictions for old NetWare clients located behind a router. It defaults to `576`, which means no packet size restrictions occur.

Usage:

```
tnservice -M -r NW -s service -a prelip-rpktsize=size
```


preserve-whitespace

When you activate this attribute, UNIX displays spaces and tabs in the service name. You can set this attribute to off when using a UNIX application that has difficulty with file names containing white spaces. It defaults to on.

Usage:

```
tnservice -M -r realm -s service -a preserve-whitespace={on|off}
```

restrictdcm

This attribute controls the handling of DOS compatibility mode file sharing. It defaults to off.

Usage:

```
tnservice -M -r realm -s service -a restrictdcm={on|off}
```

savepass

This attribute specifies the option for AppleTalk clients to save passwords locally for later use. It defaults to off.

Usage:

```
tnservice -M -r realm -s service -a savepass={on|off}
```

searchcount

This attribute controls the allocation of directory-search contexts in the LM-NT-OS/2 and NetWare realms. This attribute defaults to 100 in the LM-NT-OS/2 realm, which means no directory-search context control occurs. You should not change this attribute from its default value.

Usage:

```
tnservice -M -r realm -s service -a searchcount=value
```

share-mode

This attribute specifies the security mode of the defined LM-NT-OS/2 realm file service. This attribute defaults to off, which means TAS implements user-level security for the service. If you set this attribute to on, TAS uses share-level security mode for the defined LM-NT-OS/2 file service.

Usage:

```
tnservice -M -r realm -s service a share-mode={on|off}
```

share-user

This attribute specifies the UNIX user name for share-level security mode access to the defined volume. This attribute applies only if the service exists and only if you set the `share-mode` attribute for the service to on.

Usage:

```
tnservice -M -r realm -s service -a share-user=username
```

smb-protocol-level

The name of an SMB sub-protocol for negotiation with clients, in the LM-NT-OS/2 realm. Currently, you can use the following values: `core`, `lanman1.0`, `lanman2.0`, and `lanman2.1`. Future releases will support more values. The value of this attribute represents the highest protocol level that the server uses in negotiating protocols with a client. The client can choose any protocol level up to the one specified by this attribute. This attribute takes precedence over the `coreonly` attribute, which TAS no longer supports. You may achieve the same effect as `coreonly` on with `smb-protocol-level core`.

Usage:

```
tnservice -M -r NB -s service  
-a smb-protocol-level={core|lanman 1.0|  
lanman 2.0|lanman 2.1}
```

spooldir

This attribute specifies the directory path at which spooling occurs for LM-NT-OS/2 service print jobs. Give the full path name of a valid UNIX directory with permission mode `777` (see “`umask`” on page 178 “`umask`”). This attribute defaults to `/tmp`. On some UNIX systems, you should not use `/tmp`, because a set sticky bit may prevent the system from deleting spooled files after printing.

Usage:

```
tnservice -M -r NB -s service -a spooldir=path
```

trace

This attribute controls operations tracing in programs.

Usage:

```
tntservice -M -r realm -s service -a trace=string
```

user-map

This attribute specifies the name of a file service user map for TAS to use when converting externally-supplied user names into internal ones. If you set `authent-proxy` to `on`, TAS authenticates the external name and then converts it to its corresponding internal name; otherwise, TAS authenticates the internal name as usual. If you set `client-encryption` to `on`, TAS treats the internal name as a TAS user. Otherwise, TAS treats the internal name as a UNIX user.

If you do not define this attribute, TAS does not use a user map. This means that TAS assumes clients supply internal names—UNIX user names or TAS user names—for user names.

Usage:

```
tntservice -M -r realm -s service -a user-map=name
```

windows95-logon

If you set this attribute to `on`, TAS becomes the Windows 95 logon master for its LM-NT-OS/2 realm domain. A domain can contain only one active logon master.

Usage:

```
tntservice -M -r NB -s service -a windows95-logon={on|off}
```

Examples

1. Use one of the following commands to list all available services for the entire system:

```
tntservice
tntservice -L
```

Sample Output:

NB

myhost:file
myhost:tty:term

NW

nwmyhost:file
nwmyhost:term
nwmyhost:nvt

2. Use the following command to list the values of all attributes for all services in all realms:

```
tnservice -R
```

Sample Output:

NB

myhost:file

command=/opt/TAS/tn/NB/LMfile
description=test server
plex=unique
persistent=off
template-only=off
state=enabled

myhost:tty:term

template-only=on
transport=tcip,tnnbu
command=/opt/TAS/tn/NB/NBtty
state=disabled

NW

nwmyhost:file

template-only=off
command=/opt/TAS/tn/NW/NWfile
persistent=on
activity=off
clienttime=off
dfreport=all
null-group=4095
null-passwd-login=off
state=enabled

nwmyhost:term

template-only=on
command=/opt/TAS/tn/NW/NWtty
state=disabled

nwmyhost:nvt

template-only=on
command=/opt/TAS/tn/NW/NWnvt
persistent=on
state=disabled

3. Use the following command to list the value of the `command` attribute for the file service `myhost` in the LM-NT-OS/2 realm:

```
tnservice -R -r NB -s myhost:file -a command
```

Sample Output:

```
command=/opt/TAS/tn/NB/LMfile
```

4. Use the following command to modify the `activity` attribute for the file service `nwmyhost` in the NetWare realm:

```
tnservice -M -r NW -s nwmyhost:file -a activity=on
```

5. Use the command below to delete the terminal service `nwmyhost` from the NetWare realm. If you delete every service in a realm, you do not delete the realm itself.

```
tnservice -D -r NW -s myhost:term
```

tnsname

This command allows you to configure a static set of NetBIOS names with associated network addresses for a transport. You can list, read attribute values of, create, modify, and delete the static names.

The TAS NetBIOS-over-TCP/IP transport offers the capability to specify a set of static NetBIOS names—with associated IP addresses—for sites that do not wish to use the dynamic mechanisms for translating remote NetBIOS names to IP addresses. These static names may supplement the dynamically-determined NetBIOS names. Currently, only TCP/IP transports support static names.

Location

TNHOME/usr/sbin

Usage

```
tnsname [-L -n transport]  
tnsname [-R [-n transport [-s static_name [{-a attribute}]]]]  
tnsname [(-A|-M) -n transport -s static_name [{-a attribute=value}]]  
tnsname -D -n transport -s static_name
```

Options

- “Realm Options” on page 127
- “General Configuration Options” on page 127

<i>-n transport</i>	Specify the transport.
<i>-s static-name</i>	Static NetBIOS names, similar to service names, consist of two parts separated by a colon (:). A valid service name for the LM-NT-OS/2 realm precedes the colon. A hexadecimal number (made up of digits and lowercase letters a through f, with no leading zeroes) that gives the physical service type follows the colon. It has the same meaning as the type attribute of a service type object (refer to the “tnstype” on page 197“tnstype command). TAS supports Static NetBIOS names only for the tcpip transport.

Attribute

address

This attribute specifies the address associated with the given static name. The tcpip transport uses an IP address. Other transports do not have static names.

Usage:

```
tnsname -R -n tcpip -s static_name -a address=IP-address
```

Examples

1. Use one of the commands below to list all available transports and static NetBIOS names. This returns a hexadecimal output of the type code for static names.

```
tnsname
tnsname -L
```

Sample Output:

tnipx

tnnbu

tcpip

mth:0x20

2. Use the following command to list static NetBIOS names for the `tcpip` transport:

```
tnsname -L -n tcpip
```

Sample Output:

```
mth:0x20
```

3. Use the following command to list the value of the attribute `address` for the static name `mth:32` of the `tcpip` transport:

```
tnsname -R -n tcpip -s mth:32 -a address
```

Sample Output:

```
address=204.242.6.122
```

4. Use the following command to add the value of the attribute `address=204.242.8.123` for the static NetBIOS name `mth:32` to the `tcpip` transport:

```
tnsname -A -n tcpip -s mth:32 -a address=204.242.8.123
```

5. Use the following command to delete the static NetBIOS name `mth:32`:

```
tnsname -D -n tcpip -s mth:32
```

tnstype

This command allows you to specify service types that TAS services define. You can list, read the attribute values of, add, modify, and delete service types.

This release of TAS supports file, print, terminal, and NVT services. The LM-NT-OS/2 realm uses file and terminal services, the NetWare realm uses file, terminal, and NVT services, and the AppleTalk realm uses file and print services.

Location

TNHOME/usr/sbin

Usage

```
tnstype [-L [-r realm]]
tnstype [-R [-r realm [-t type [{-a attribute}]]]]
tnstype [(-A|-M) -r realm -t type {-a attribute=value}]
tnstype [-D -r realm -t type]
```

Options

- “Realm Options” on page 127
- “General Configuration Options” on page 127

Note

You cannot delete a service type from a realm if a service of that type exists in the realm.

Attributes

- “description” on page 198
- “fixed-socket” on page 198
- “protocol” on page 198
- “type” on page 198

description

This attribute describes the service. It has no default.

Usage:

```
tnstype -M -r realm -t type -a description='string'
```

fixed-socket

This attribute specifies the fixed socket number for the NetWare service configured to the IPX/SPX protocol. Currently, this attribute exists only for backward compatibility by service types developed before the existence of the generalized IPX SAP protocol. For example, the NetWare file service always has socket number 0x651.

Usage:

```
tnstype -M -r realm -t type -a fixed-socket=number
```

protocol

This attribute defines the protocol for the defined service type. Choose from the following:

- LM-NT-OS/2 realm: NB session
- NetWare realm: SPX, IPX, or TNIL
- AppleTalk realm: AFP or PAP

Usage:

```
tnstype -M -r realm -t type -a protocol=protocol
```

type

This attribute defines the physical type code for the service type of the LM-NT-OS/2 and NetWare realms, a 16-bit hexadecimal number. The AppleTalk realm has a code number string. This attribute has no default.

Usage:

```
tnstype -M -r realm -t type -a type=physical-type-code
```

Examples

1. Use one of the following commands to list service types available for the entire system:

```
tnstype
tnstype -L
```

Sample Output:

NB

file

term

NW

term

nvt

file

2. Use the following command to list all services and their attribute values:

```
tnstype -R
```

3. Use the following command to list the value of the attribute `protocol`, for terminal services in the NetWare realm:

```
tnstype -R -r NW -t term -a protocol
```

4. Use the following command to add the `file` service type to the AppleTalk realm:

```
tnstype -A -r AT -t file
```

5. Use the following command to delete the `nvt` service type from the NetWare realm:

```
tnstype -D -r NW -t nvt
```

tnsuffix

This command allows you to manage AppleTalk map suffixes. You can list, read attribute values of, add, modify, and delete suffixes from the TotalNET AppleTalk map section. Suffixes handle file extensions in AppleTalk maps. AppleTalk maps represent associations between Macintosh-style file attributes and UNIX file suffixes. You can define more than one suffix for an AppleTalk map, and more than one file service can reference an AppleTalk map.

Location

TNHOME/usr/sbin

Usage

```
tnsuffix -L [-m atmap]]
tnsuffix -R [-m atmap [-x suffix [{-a attribute}]]]
tnsuffix (-A|-M) [-m atmap [-x suffix
    {-a attribute=value}]]
tnsuffix -D -m atmap -x suffix
```

Options

- “General Configuration Options” on page 127

<code>-m <i>atmap</i></code>	Specify an AppleTalk map.
<code>-x <i>suffix</i></code>	Specify the suffix to add, modify, or delete.

Attributes

- “comment” on page 201
- “conversion” on page 201
- “creator” on page 201

- “type” on page 201

comment

This attribute specifies the comment to associate with UNIX files.

Usage:

```
tnsuffix -M -m atmap -x suffix -a comment=string
```

conversion

This attribute specifies the conversion discipline to associate with UNIX files with the given suffix.

Usage:

```
tnsuffix -M -m atmap -x suffix -a conversion={ascii|binary}
```

creator

This attribute specifies the four-character Macintosh creator code to associate with UNIX files with the given suffix.

Usage:

```
tnsuffix -M -m atmap -x suffix  
-a creator=Macintosh-creator-code
```

type

This attribute specifies the four-character Macintosh type code to associate with UNIX files with the given suffix.

Usage:

```
tnsuffix -M -m atmap -x suffix  
-a type=Macintosh-type-code
```

Examples

1. Use one of the following commands to list all available suffixes for the entire AppleTalk realm:

```
tnsuffix  
tnsuffix -L
```

Sample Output:

```
atblahmap  
  
        .zip  
        .ppt  
        .doc  
  
nnnmap  
  
        .xls  
        .txt  
        .ps
```

2. Use the following command to list all suffixes available for the AppleTalk map nnnmap:

```
tnsuffix -L -m nnnmap
```

Sample Output:

```
.xls  
.txt  
.ps
```

3. Use the following command to read the value of the attribute `comment` for the suffix `.xls` in the AppleTalk map `atblahmap`:

```
tnsuffix -R -m atblahmap -x .xls -a comment
```

4. Use the following command to create the suffix .ps in the AppleTalk map

nnnmap:

```
tnsuffix -A -m nnnmap -x .ps -a type=PS  
-a comment='PostScripts'
```

5. Use the following command to modify the value of the comment attribute to read “Microsoft Word for Windows 95 version 7.0” for the suffix .doc in the AppleTalk map atblahmap:

```
tnsuffix -M -m atblahmap -x .doc  
-a comment='Microsoft Word for Windows 95 version 7.0'
```

6. Use the following command to delete the suffix .xls from the AppleTalk map atblahmap:

```
tnsuffix -D -m atblahmap -x .xls
```

tnsystem

This command allows you to specify TAS system configuration options. You can read the attribute values and add and modify system configuration options. During its installation, TAS installs and configures a basic system by setting default values for most system configuration options. The TAS administrator's user name defaults to totalnet. The host system name defaults to the host on which you installed TAS; you cannot change this attribute. This command supports only the “read” (-R) and “modify” (-M) general configuration options. It defaults to “read”.

Location

TNHOME/usr/sbin

Usage

```
tnsystem
tnsystem -R [{-a attribute}]
tnsystem -M {-a attribute=value}
```

Options

- “General Configuration Options” on page 127

Attributes

- “admin-user” on page 204
- “dfinterval” on page 204
- “host-charset” on page 205
- “host-packaging” on page 205
- “spooler” on page 205
- “start-at-boot” on page 205
- “system-name” on page 205

admin-user

This attribute specifies the TAS administrator’s user name. It defaults to `totalnet`. TAS gives ownership of certain processes and data files to the administrator, who must own the TAS home directory `TNHOME`.

Usage:

```
tnsystem -M -a admin-user=username
```

dfinterval

This attribute specifies the interval, in seconds, between determinations of free disk space on the server. It defaults to 600 seconds. File services in all realms use the free space information.

Usage:

```
tnsystem -M -a dfinterval=interval
```


host-charset

This attribute specifies the host's character set. It defaults to `builtin-iso-latin-1`, the TAS built-in version of the ISO-8859-1 character set, a superset of the ASCII character set. File services in all realms use this information.

Usage:

```
tnssystem -R -a host-charset=charset
```

host-packaging

This attribute specifies the host's character-packaging style. It defaults to `default`, which indicates that the packaging style depends on the host's character set: `single` if `host-charset` contains multi-byte characters, `single` if not. Besides `default`, you may specify `single`, `single`, `single`, or `single-jis`. File services in all realms use this information.

Usage:

```
tnssystem -R  
-a host-packaging={default|single|euc|shift-jis}
```

spooler

This attribute specifies the full path name of the UNIX print spooler, such as `lp` or `lpr`. File and print services in all realms use this information.

Usage:

```
tnssystem -M -a spooler=spoolername
```

start-at-boot

This attribute specifies whether the TAS system starts at each system reboot. Only the TAS boot-time start-up script queries this attribute.

Usage:

```
tnssystem -R -a start-at-boot={on|off}
```

system-name

This attribute specifies the name of the system, as returned by the UNIX `hostname` or `uname -n` commands. The installation program sets `system-name` to the

nodename[] string returned by the `uname(2)` system call. You cannot modify this attribute.

Examples

1. Use the following command to list all system configuration attributes of the TAS system:

```
tnsystem -R
```

Sample Output:

```
system-name=sonpc
admin-user=totalnet
spooler=maxar
dfinterval=60
state=enabled
```

2. Use the following command to list the value of the attribute `admin-user`:

```
tnsystem -R -a admin-user
```

Sample Output:

```
admin-user=totalnet
```

3. Use the following command to set the value of the attribute `dfinterval` to 30:

```
tnsystem -M -a dfinterval=30
```

tntransport

This command reads, lists, adds, modifies, and deletes TAS transport configuration options. The system defines transports—low-level networking protocols referenced from realms. In the current implementation, TAS provides services for each supported realm over the corresponding transport protocols:

- LM-NT-OS/2 realm: NetBIOS-over-TCP/IP (tcpip) and NetBIOS-over-NetBEUI (tnnbu)
- NetWare realm: NetWare-over-IPX (tnipx)
- AppleTalk realm: AppleTalk (tnatk)

Location

TNHOME/usr/sbin

Usage

```
tntransport [-L]
tntransport [-R [-n transport [{-a attribute}]]]
tntransport [(-A|-M) -n transport {-a attribute=value}]
tntransport [-D -n transport]
```

Options

“General Configuration Options” on page 127General Configuration Options

<code>-n transport</code>	Specify the transport.
---------------------------	------------------------

Note

You cannot delete a transport from the system if a realm references it.

Attributes

Attribute for all transports:

- “template-only” on page 208

Attributes for the `tcpip` transport:

- “bcast-style” on page 209
- “NB-session-port” on page 210
- “NB-ensclient” on page 209
- “NB-ens-port” on page 209
- “NB-ensclient” on page 209
- “NB-name-port” on page 209
- “NB-nd-addr” on page 210

- “NB-nd-enable ” on page 210
- “NB-nd-port” on page 210
- “NB-nokeep” on page 211
- “NB-scope” on page 211
- “NB-session-port” on page 210
- “recvbuf” on page 211
- “sendbuf” on page 212

Attributes for the `tnipx` transport:

- “rip-age-multiple ” on page 212
- “rip-age-timeout ” on page 212
- “rip-bcast-interval” on page 212
- “rip-ipg” on page 212
- “rip-max-entries” on page 213
- “rip-poll-base” on page 213
- “rip-xck-multiple” on page 213
- “rip-xck-prob” on page 213
- “rip-xck-prob” on page 213
- “router” on page 214
- “sap-age-timeout” on page 214
- “sap-age-timeout” on page 214
- “sap-answer-nearest” on page 214
- “sap-bcast-interval ” on page 214
- “sap-ipg” on page 215
- “sap-max-entries” on page 215
- “spxmaxpacket” on page 215

Attributes for the `tnatk` transport:

- “local-zone” on page 215
- “router ” on page 215

template-only

With TAS, you can mark transports as templates. When you set this attribute to on, TAS treats the defined object as a real object without affecting the system’s runtime behavior. The TAS installation program creates templates with names that reflect their objects. You can assign default values to templates for the system to use when

creating new objects. When you set the value of `template-only` to `off`, the defined object becomes real.

Usage:

```
tntransport -M -n transport -a template-only={on|off}
```

bcast-style

This attribute specifies the host part of broadcast addresses. It applies only to a small fraction of platforms, namely those TCP/IP platforms that do not support the “get broadcast address interface” IOCTLs, such as Berkeley’s SIOCGIFCONF. This attribute defaults to 255.255.255.255.

Usage:

```
tntransport -M -n tcpip -a bcast-style=address
```

NB-ensclient

This attribute only applies if this host uses multiple network interfaces for NetBIOS-over-TCP/IP. Setting this attribute to `on` forces the host to register multiple IP addresses with the ENS agent as equivalent.

Usage:

```
tntransport -M -n tcpip -a NB-ensclient={on|off}
```

NB-ensport

This attribute specifies the UDP port number at which the host makes ENS services available. If the network uses ENS, you should include this attribute on every LM-NT-OS/2 realm host server as an ENS client or ENS agent (ENSA). For the `UDP-port-number` variable, specify a number from 0 to 65535. It should not exceed 1023. It defaults to 228.

Usage:

```
tntransport -M -n tcpip -a NB-ensport=UDP-port-number
```

NB-name-port

NB-dgram-port

NB-session-port

These attributes specify the TCP/UDP port numbers at which NetBIOS services reside. By default, these attributes do not exist, which means the same as 137, 138, and 139, respectively. Since NetBIOS clients can rarely use non-standard port numbers, these attributes generally apply only during development or troubleshooting. Do not change these attributes from their default values.

Usage:

```
tntransport -M -n transport
-a {NB-name-port|NB-dgram-port|
  NB-session-port}=value
```

NB-nd-addr

This attribute specifies a list of IP addresses, in Internet dotted numeric notation, at which the ENS Network Directory Agents (NDAs) reside. Separate addresses with commas. If you do not leave this list empty, the system acts as an ENSA. This attribute supports only one NDA.

Usage:

```
tntransport -M -n tcpip -a NB-nd-addr=IP-address
```

NB-nd-enable

This attribute causes the TAS host to act as the Network Directory Agent (NDA) for the enterprise-wide network. It defaults to off.

Usage:

```
tntransport -M -n tcpip -a NB-nd-enable={on|off}
```

NB-nd-port

This attribute specifies the UDP destination port number for transmitting data to the NDA. If the network uses ENS, you should include this command on every ENSA on the network if the default port number 227 does not work, and also on all systems where the NDA resides. For *port-number*, specify a number from 0 to 65535. It should not exceed 1023. The default value generally suffices.

Usage:

```
tntransport -M -n tcpip -a NB-nd-port=port-number
```

NB-nokeep

This attribute enables or disables TCP keepalives. It defaults to off. If you set the option it to on, the system does not enable TCP keepalives. If the underlying TCP implementation provides keepalives, NetBIOS TCP sessions normally enable TCP keepalives. TCP keepalives differ from NetBIOS keepalives, which have separate controls.

Usage:

```
tntransport -M -n tcpip -a NB-nokeep={on|off}
```

NB-scope

This attribute specifies the NetBIOS naming scope. It allows the unique NetBIOS name to expand for use in large or dispersed networks. This attribute limits the scope—also called the logical domain—of NetBIOS names. For example, the name JOE may have the scope ADMIN. End users cannot see the scope, but the name transmitted over the network contains both parts of the name, in the form JOE.ADMIN. The addition of the naming scope prevents confusion with other nodes called JOE on other network segments.

The scope applies over at least the local network segment and to all NetBIOS names in LM-NT-OS/2 realm. It consists of any ASCII string up to 256 characters. It defaults to no naming scope.

Usage:

```
tntransport -M -n tcpip -a NB-scope=scope-string
```

recvbuf

This attribute designates the “receive” buffer size to set in TCP. This attribute defaults to 0—no “receive” buffers.

Usage:

```
tntransport -M -n transport -a recvbuf=bufsize
```

sendbuf

This attribute designates the “send” buffer size to set in TCP. This attribute defaults to 0—no “send” buffers.

Usage:

```
tntransport -M -n transport -a sendbuf=bufsize
```

rip-age-multiple

rip-age-timeout

These attributes control IPX RIP aging. Measure the first `rip-age-timeout` in IPX RIP polling-timer ticks and the second in seconds. By default these attributes do not exist—they default to 2 and 180, respectively. Do not change these attributes from their default values.

Usage:

```
tntransport -M -n tnipx -a rip-age-multiple=2  
tntransport -M -n tnipx -a rip-age-timeout=180
```

rip-bcast-interval

This attribute determines the frequency, in seconds, at which to send IPX RIP broadcasts. It defaults to 60. Do not change this attribute from its default value.

Usage:

```
tntransport -M -n tnipx -a rip-bcast-interval=60
```

rip-ipg

This attribute determines the inter-packet gap for IPX RIP, in milliseconds. Use this attribute when one network receives multiple IPX RIP packets in succession. This attribute defaults to 40. Do not change this attribute from its default value.

Usage:

```
tntransport -M -n tnipx -a rip-ipg=40
```


rip-max-entries

This attribute designates the maximum number of IPX RIP entries for each outgoing packet. For each interface, you may reduce the value to fit within the maximum data size available. This attribute defaults to 50, the value given by Novell. Do not change this attribute from its default value.

Usage:

```
tntransport -M -n tnipx -a rip-max-entries=50
```

rip-poll-base

This attribute determines the frequency, in seconds, of IPX RIP polling-timer ticks. This controls IPX RIP aging and cross-checking. This attribute defaults to 30. Do not change this attribute from its default value.

Usage:

```
tntransport -M -n tnipx -a rip-poll-base=30
```

rip-xck-fract

rip-xck-multiple

rip-xck-prob

These attributes control IPX RIP cross-checking. Measure the first in IPX RIP polling-timer ticks. The other values represent the fraction of the IPX RIP table to check and one of two ways to check it. By default these attributes do not exist—they default to 20, 6, and 6, respectively. Do not change these attributes from their default values.

Usage:

```
tntransport -M -n tnipx -a rip-xck-multiple=20  
tntransport -M -n tnipx -a rip-xck-fract=6  
tntransport -M -n tnipx -a rip-xck-prob=6
```

router

This attribute specifies whether IPX Routing Information Protocol (RIP) advertises the routing services. It defaults to on.

For tnatk, this attribute controls whether the system acts as an AppleTalk router or not. It defaults to auto, which means that the system acts as a router if you specify more than one tnatk interface.

Usage:

```
tntransport -M -n tnipx -a router={on|off}
```

sap-age-interval

sap-age-timeout

These attributes control IPX SAP aging in units of seconds. By default these attributes do not exist—they default to 60 and 180, respectively. Do not change these attributes from their default values.

Usage:

```
tntransport -M -n tnipx -a sap-age-interval=60  
tntransport -M -n tnipx -a sap-age-timeout=180
```

sap-answer-nearest

This attribute specifies whether IPX SAP GetNearestServer queries receive responses. It defaults to on. Do not change this attribute from the default unless so directed by Syntax Technical Support.

Usage:

```
tntransport -M -n tnipx  
-a sap-answer-nearest={on|off}
```

sap-bcast-interval

This attribute determines the frequency, in seconds, at which to send IPX SAP broadcasts. By default this attribute does not exist—it defaults to 60. Do not change this attribute from its default value.

Usage:

```
tntransport -M -n tnipx -a sap-bcast-interval=60
```

sap-ipg

This attribute determines the inter-packet gap for IPX SAP, expressed in milliseconds. It defaults to 40. Use this command when a network receives multiple IPX SAP packets in succession.

Usage:

```
tntransport -M -n tnipx -a sap-ipg=40
```

sap-max-entries

This attribute determines the maximum number of IPX SAP entries for each outgoing packet. It defaults to 7, the value given by Novell. For each interface, you may reduce the value to fit within the maximum data size available on that interface.

Usage:

```
tntransport -M -n tnipx -a sap-max-entries=7
```

spxmaxpacket

This attribute designates the SPX maximum packet size. It defaults to off—8192. Do not change this attribute from its default value.

Usage:

```
tntransport -M -n tnipx -a spxmaxpacket=8192
```

local-zone

This attribute specifies the system's AppleTalk zone.

Usage:

```
tntransport -M -n tnatk -a local-zone=zonename
```

router

This attribute controls whether TAS acts as an AppleTalk router. It defaults to auto, which means that TAS acts as a router if you configure more than one tnatk interface.

Usage:

```
tntransport -M -n tnatk -a router={auto|on|off}
```

Examples

1. Use one of the following commands to list all available transports:

```
tntransport  
tntransport -L
```

Sample Output:

```
tcpip  
tnipx  
tnnbu  
tnatk
```

2. Use the following command to list all available transports and their attribute values:

```
tntransport -R
```

3. Use the following command to list the value for NB-ens-port, for the tcpip transport:

```
tntransport -R -n tcpip -a NB-ens-port
```

4. Use the following command to set the value of the template-only attribute for the tnatk transport to on:

```
tntransport -M -n tnatk -a template-only=on
```

5. Use the following command to delete the tnatk transport:

```
tntransport -D -n tnatk
```

tnumap

This command gives you the ability to manage file-service user maps. You can list, read the attribute values of, add, modify, and delete user maps. A file service can reference only one user map.

With a user map, a file service maps user names from an external name database—such as a set of pre-existing NetBIOS, NetWare, or AppleTalk user names—to an internal name database of UNIX user names or TAS user names. TAS defines user maps at the system level. More than one file service can reference a user map. Each user map consists of a set of associations between an internal file service user name—a UNIX user—and a list of external names to map to the internal name. To add these associations, refer to “tnumapuser” on page 218.

For a file service to use a user map, you need to set its user-map attribute. To do so, refer to “tnservice” on page 174 “tnservice. Currently, user maps do not have any attributes. If you specify the `-a` option, `tnumap` ignores it.

Location

TNHOME/usr/sbin

Usage

```
tnumap [-L]
tnumap [-R [-m user-map [{-a attribute}]]]
tnumap [(-A|-M) -m user-map [{-a attribute=value}]]
tnumap [-D -m user-map]
```

Options

“General Configuration Options” on page 127 General Configuration Options

<code>-m <i>user-map</i></code>	Specify the user map.
---------------------------------	-----------------------

Examples

1. Use one of the following commands to list all available user maps:

```
tnumap
tnumap -L
```

Sample Output:

```
marketmap
worker
supermap
```

- 2. In future releases of TAS, you can use the following command to list the values of all attributes for the user map worker:**

```
tnumap -R -m worker
```

Sample Output:

This command gives no output, since user maps do not have any attributes in the current release of TAS.

- 3. Use the following command to create the user map worker:**

```
tnumap -A -m worker
```

- 4. Use the following command to delete the user map worker:**

```
tnumap -D -m worker
```

tnumapuser

This command allows you to manage users added to specified user maps. You can list, read the attribute values of, add, modify, and delete user maps.

The users objects form associations between internal user names—TAS secure-authentication or UNIX user names—and a list of external names, such as a set of pre-existing NetBIOS, NetWare, or AppleTalk user names, to map to the internal name.

Before you can add any user object to a user map, you must create the user map. Refer to “tnumap” on page 217 instructions on creating a user map. You can define more than one user object for a user map, and more than one file service can reference a user map.

Location

TNHOME/usr/sbin

Usage

```
tnumapuser [-L [-m user-map]]
tnumapuser [-R [-m user-map [-u internal-user
  [-a attribute]]]]
tnumapuser [(-A|-M) -m user-map -u internal-user
  [-a attribute=value]]
tnumapuser [-D -m user-map -u internal-user]
```

Options

“General Configuration Options” on page 127

-m <i>user-map</i>	Specify the user map.
-u <i>internal-user</i>	Specify the name of the internal user.

Attribute

external-users

This attribute specifies external user names that should map to the internal user names.

Usage:

```
tnumapuser (-A|-M) -m user-map -u internal-user
  -a external-users=names
```

Examples

1. Use one of the following commands to list all available user objects for all user maps:

```
tnumapuser  
tnumapuser -L
```

Sample Output:

```
supermap  
totalnet  
johndoe  
carolyn  
worker  
barryw  
wilson  
danielle
```

- 2. Use the following command to list all user objects available for the user map supermap:**

```
tnumapuser -L -m supermap
```

Sample Output:

```
totalnet  
johndoe  
carolyn
```

- 3. Use the following command to read the value of the attribute external-users for the user barryw in the user map worker:**

```
tnumapuser -R -m worker -u barryw -a external-users
```

Sample Output:

```
external-users=barry_will
```

- 4. Use the following command to add the value of the attribute external-users for the user johndoe in the user map supermap:**


```
tnumapuser -A -m supermap -u johndoe
-a external-users=john_d
```

5. Use the following command to delete the user totalnet for the user map supermap:

```
tnumapuser -D -m supermap -u totalnet
```

tnvolume

This command manages volumes, created as system objects, as system-level objects. A new volume does not become available until you reference it to a service. Volume referencing requires two separate operations: adding a volume as a system object and referencing a volume. You can list, read, add, modify, and delete TotalNET volumes and volume configuration options.

The TAS environment defines volumes as directories of the UNIX file system that file services can export. This command defines volumes at the system level, since file services in different realms may export the same volume, and a file service may reference any number of volumes. Supply volume names in lower-case.

Because each TotalNET realm has its own case-mapping scheme, the naming conventions allow volume names to conform to the style of the individual realm. However, a realm may allow volume names that other realms do not.

Volumes have the following naming scheme:

- Each realm has its own set of characters for use in volume names. This does not include the null character ('\0'), upper case characters, or any other characters forbidden by the realm.
- Each volume name must have at least one character, and at least one realm must allow all the characters in the name.
- Clients in a realm cannot access volumes with characters forbidden in the realm. To make a volume accessible in all realms, form its name from characters accepted by all realms.
- For the LM-NT-OS/2 realm, volume names can contain up to 12 characters; NetWare realm volume names can contain up to 15 characters; and AppleTalk realm volume names can contain up to 27 characters. You can create names exceeding these maximums, but if you do, the clients whose limits such names

exceed cannot see the names in their browse lists—except for the Windows client, which truncates the volume name after the first 12 characters.

Since attach point names have fewer limitations, you may use them to lax the restrictions on volume names. You can, for example, define realm-specific synonyms for a volume shared across all realms.

Location

TNHOME/usr/sbin

Usage

```
tnvolume [-L]
tnvolume [-R [-v volume [{-a attribute}]]]
tnvolume [(-A|-M) -v volume {-a attribute=value}]
tnvolume [-D -v volume]
```

Options

“General Configuration Options” on page 127

-v <i>volume</i>	Specify a volume.
------------------	-------------------

Note

You cannot delete a volume from the system if a service references it.

Attributes

- “atalk-map” on page 223
- “atalk-password” on page 223
- “atalk-per-session-dids” on page 223
- “atalk-text-conv” on page 224
- “description” on page 224
- “filename-case” on page 224
- “meter” on page 225
- “path” on page 225
- “protect” on page 226

- “share-access” on page 226
- “share-passwd” on page 226
- “template-only” on page 227
- “umask” on page 227

atalk-map

This attribute specifies the name the AppleTalk realm file service uses for the volume map, to map the UNIX file name suffixes in a volume to Macintosh types and owners. You must use a genuine AppleTalk map name, not an AppleTalk map template.

Usage:

```
tnvolume -M -v volume -a atalk-map=map-name
```

atalk-password

This attribute specifies the AppleTalk password of a volume. The password applies only to the AppleTalk realm. Enter the value for the atalk-password string in plain text. You may use the following values for AppleTalk passwords: #, “”, and *password*—the actual password.

For the “read” (-R) option, this attribute indicates the status of the AppleTalk volume password. If you cannot determine the status of the password because of access restrictions, this attribute has the value “?”. It has the value “x” if the volume has an AppleTalk password, “#” if the password denies all access, and “”—the null string—if the volume has no password.

For the “add” (-A) option, this attribute specifies the AppleTalk password to apply to the volume. The “#” value denies all access. If you do not specify this attribute, or if you specify the string as “null” or “”, clients can access the volume without passwords.

For the “modify” (-M) option, this attribute allows you to remove the atalk-password attribute by setting it to null or “”. The volume then becomes accessible to clients without passwords.

Usage:

```
tnvolume -M -v volume -a atalk-password=password
```

atalk-per-session-dids

This attribute determines AppleTalk directory ID persistence. If you set this attribute to off, the default, AppleTalk directory IDs persistently associate themselves with

directories in the volume. If you set this attribute to on, each directory ID remains only for the duration of a single client session; subsequently, features that depend on persistent IDs, such as the Macintosh O/S alias facility, do not function across successive file service sessions.

The host system requires a modest amount of overhead to maintain and manage a permanent database of directory IDs. For some volumes, especially extremely large ones like those residing on “infinite” storage devices, this overhead becomes excessive.

Usage:

```
tnvolume -M -v volume
-a atalk-per-session-dids={on|off}
```

atalk-text-conv

This attribute applies text file mapping to files in the volume.

Usage:

```
tnvolume -M -v volume -a atalk-text-conv={on|off}
```

description

This attribute specifies a textual description of the volume. It has no default. If your description includes symbols, enclose it in quotes. If possible, the system shows this string to clients through browsing interfaces and to administrators through administrative interfaces.

Usage:

```
tnvolume -M -v volume -a description=string
```

filename-case

This attribute controls the way file services handle the distinction between upper- and lower-case letters in file names in the volume. If you set this attribute to lower, file services handle names by translating them internally to lower-case file names. This simplifies file searches by name and results in an efficient implementation of the case-insensitivity expected by clients. Clients see file names in mixed case, but can use either case for any letters when supplying file names themselves. This file name handling can cause problems for UNIX applications that expect files to have the mixed-case names as supplied by clients.

If you set this attribute to preserve, file services look up names in their standard form in a shadow-attribute file. This allows file services to store files under UNIX in

the same case-pattern used by the client, and still provide true case-insensitivity with reasonable efficiency.

If you do not define this attribute, or if you set it to default, you achieve the same effect as if you set it to preserve.

Usage:

```
tnvolume -M -v volume  
-a filename-case={lower|preserve|default}
```

meter

This attribute controls metering. If you set it to on, UNIX records, in an event log, user attachments to the volume in all realms. You can analyze this log to derive current and historical access statistics.

Usage:

```
tnvolume -M -v volume -a meter={on|off}
```

path

This attribute specifies the absolute path of the UNIX directory that serves as the virtual root of the volume. Choose from the following strings:

%USER%	The name of user.
%GROUP%	The user's primary group name.
%CLIENT%	The name of the NetBIOS client. For the NetWare and AppleTalk realms, %CLIENT% has the same meaning as %USER%.
%HOME%	The user's home directory.
%SYSTEM%	The system name.
%REALM%	The realm name (NW, NB, or AT).
%SERVICE%	The file service name.
%%	An actual percent sign.

One volume's directory may lie within another volume. A volume cannot, however, coincide with or lie within a protected volume (see the "protect" on page 226 "protect attribute). Since a volume generally reveals its path only when a file attaches to it, this limitation applies, in part, during attachment.

Usage:

```
tnvolume -M -v volume -a path=pathname
```

protect

This attribute specifies the number of clients that can simultaneously access the volume. It refuses access to additional clients. Attachments count cumulatively for all realms, and a count of 0 denies all access to the volume. If the volume lies within another volume, it appears empty when a client tries to access it through the volume in which it lies. No volumes may coincide with or lie within a protected volume. This attribute helps administrators comply with software licenses. It does not support escape sequences for its path.

Usage:

```
tnvolume -M -v volume -a protect=limit
```

share-access

This attribute determines share-mode access to the volume in the LM-NT-OS/2 realm. For share mode volumes, a separate, per-volume password, rather than the UNIX user identity, controls access. This attribute defaults to off, which means clients can only access the volume through user-level security mode services. With this attribute on, clients may access the volume through share-level security mode services.

Usage:

```
tnvolume -M -v volume -a share-access={on|off}
```

share-passwd

This attribute specifies the share-mode password for a volume in the LM-NT-OS/2 realm, if you set share-access to on. Enter the value for password-string in plain text. You may use the following values for AppleTalk passwords: # (special value to deny access), "" (password checked and access allowed), and password (the actual password).

For the "read" (-R) option, this attribute indicates the status of the share-mode password. If you cannot determine the status of the password because of access restrictions, this attribute has the value "?". It has the value "x" if the volume has an share-mode password, "#" if the password denies all access, and ""—the null string—if the volume has no password.

For the "add" (-A) option, this attribute specifies the share-mode password to apply to the volume, in plain text. The "#" value indicates that the password should deny access in share mode. If you do not specify this attribute, or if you specify the string as "null" or "", clients can access the volume in share mode without passwords.

For the “modify” (-M) option, this attribute allows you to remove the share-password attribute by setting it to null or “”. The volume then becomes accessible in share mode to clients without passwords.

Usage:

```
tnvolume -M -v volume -a share-passwd=password-string
```

template-only

This attribute causes the volume to behave only as a template. If you set it to on, TAS treats the object as a real object, but it has no effect on the runtime behavior of the system. The TAS installation program creates templates with conventional names reflecting the objects. It assigns default values to templates for the creation of new objects. When you set this attribute to off, the object becomes real.

Usage:

```
tnvolume -M -v volume -a template-only={on|off}
```

umask

This attribute designates the UNIX umask value for accessing the volume. Without this attribute, UNIX uses the umask of the file service when accessing the volume and can potentially override umask entries in a user’s personal profile, in \$HOME/.profile.file.

Usage:

```
tnvolume -M -v volume -a umask=value
```

Examples

1. Use one of the following commands to list available volumes defined at the system level:

```
tnvolume
tnvolume -L
```

Sample Output:

```
sys
home
ccmail
myvol
```

2. Use the following command to list the values of all available volumes and their corresponding attributes:

```
tnvolume -R
```

Sample Output:

```
sys
    template-only=off
    path=/usr/tn/NW/sys
    share-password=

home
    template-only=off
    path=%HOME%
    atalk-text-conv=off
    share-access=off
    share-password=

ccmail
    path=/home/ccmail
    share-access=off
    template-only=off
    share-password=myvolume
    atalk-text-conv=off

myvol
```



```
path=/tmp
share-access=off
template-only=off
share-password=
```

3. Use the following command to list the value of the volume attribute `path` for the volume `home`:

```
tnvolume -R -v home -a path
```

Sample Output:

```
path=%HOME%
```

4. Use the following command to change the value of the `share-access` attribute for the volume `myvolume` to on:

```
tnvolume -M -v myvolume -a share-access=on
```

5. Use the following command to delete the volume `ccmail`:

```
tnvolume -D -v ccmail
```

tnvref

This command allows you to manage volume references to specified file services. You can list, read attribute values of, add, and delete volume references defined for file services.

Within the TotalNET environment, an individual file service contains a list of volume references it exports. The volumes section defines the real volumes, and their attributes, at the system level.

Location

TNHOME/usr/sbin

Usage

```
tnvref [-L [-r realm [-s service]] -v volume]
```

```
tnvref [(-A|-D) -r realm -s service -v volume]
```

Options

“General Configuration Options” on page 127“General Configuration Options

<code>-v <i>volume</i></code>	Specify a volume.
-------------------------------	-------------------

Notes

1. You cannot delete a volume reference from a service if the reference serves as the volume attribute of an attach point in the service.
2. TAS NetWare and AppleTalk realms support up to 255 volumes for a single file service connection.

Examples

1. Use one of the following commands to list all volume references by all file services in all realms:

```
tnvref  
tnvref -L
```

Sample Output:

NW

nwpacman:file

sys

```

tmp
home
nwpacman:term
nwpacman:nvt
dnwpacman:file
sys
tmp
home
AT
atpacman:file
tmp
mspac:file
bally
barny

```

2. Use the following command to list all volume references for the file service `myhost` in the LM-NT-OS/2 realm:

```
tnvref -L -r NB -s myhost:file
```

Sample Output:

```
sys
tmp
home
```

3. Use the following command to add a volume reference by defining the volume name `ccmail` for the file service `myhost` in the LM-NT-OS/2 realm:

```
tnvref -A -r NB -s myhost:file -v ccmail
```

4. Use the following command to delete the volume reference `ccmail` from the file service `nwmyhost` in the NetWare realm:

```
tnvref -D -r NW -s nwmyhost:file -v ccmail
```

Client Utilities

TAS provides a set of PC utilities located under `$TNHOME/usr/lib/pcbin`. These utilities include general, NetWare, and SMB client utilities. For information on the location of the TotalNET home directory, see the *TotalNET Advanced Server Release Notes*.

General Client Utilities:

- “utype” on page 234 — Displaying UNIX text files.
- “version” on page 234 — Viewing the PC utility version.

NetWare Client Utilities:

Only DOS VLM/NETX clients support these utilities. You should use them only if you do not have NetWare login utilities:

- “attach” on page 235 — Attaching to a server.
- “capture” on page 236 — Management of port redirection.
- “edscript” on page 237 — Editing login scripts.
- “login” on page 239 — Logging in to a file server.
- “logout” on page 240 — Logging out of a file server.
- “map” on page 241 — Redirecting drives.
- “slist” on page 242 — Listing active NetWare servers.

SMB Client Utility:

- “nettime” on page 243 — Synchronizing system times.

utype

This command adds carriage returns to UNIX text files' lines so they can appear in DOS. UNIX text files and DOS text files differ in one character at the end of each line. DOS text lines end with a carriage return/line-feed (CLRF), and UNIX text files end with a line-feed only (LF). The text files appear on a local computer screen.

Location

`$TNHOME/usr/lib/pcbin`

Usage

`utype file...`

Option

<i>file</i>	Specify the name of the UNIX file to display.
-------------	---

Example

Use the following command to add carriage returns to the lines of UNIX text files alpha, beta, delta, and gamma, and display the files:

```
utype alpha beta delta gamma
```

version

This command displays the version of a PC utility on your server.

Location

`$TNHOME/usr/lib/pcbin`

Usage

`version file...`

Option

<i>file</i>	Specify the name of the PC utility whose version you want to view.
-------------	--

Example

Use the following command to display the version of the PC utility `sketch`:

```
version sketch
```

attach

This command accesses another NetWare file server while maintaining your current connections.

Location

`$TNHOME/usr/lib/pcbin`

Usage

`attach server[/user]`

Options

<code>server</code>	Specify the NetWare server to which you want to attach.
<code>user</code>	Specify the user name you want to use for connection to the server, if other than your current user name.

Example

Use the following command to attach to the server `nwquest` as user `knight`:

```
attach nwquest/knight
```

capture

This command manages redirection of local ports to a NetWare print queue.

Location

```
$TNHOME/usr/lib/pcbin
```

Usage

To direct a local port to a print queue:

```
capture s=server q=queue Lpt={1|2|3} [option...]
```

To remove a connection to a print queue:

```
capture Off = {1|2|3|ALL} [ /Cancel ]
```

To display the connection:

```
capture SHow
```


Options

server	Specify a NetWare server.
queue	Specify the name of a print queue on the NetWare server.
option	Specify either Notify or NoNotify and Autoend or NoAutoend: Notify — Send notification when data prints. NoNotify — Do not send notification when data prints. Autoend — Send data to the network printer when you enter or exit an application. NoAutoend — Do not send data to the network printer when you enter or exit an application. This option defaults to NoNotify and Autoend.

Examples

1. Use the following command to direct local port 1 to print queue china through server wall and receive notification when the data prints:

```
capture wall china 1 Notify
```

2. Use the following command to remove connections from all print queues:

```
capture Off =ALL
```

3. Use the following command to display the print queue connection:

```
capture SHow
```

edscript

This command edits a NetWare login script file. For information on NetWare login scripts that work with TAS, refer to Chapter 6.

Location

`$/TNHOME/usr/lib/pcbin`

Usage

`edscript option...`

Option

option	Specify one of the following: <code>/user:name</code> — Specify a user other than yourself. <code>/server:name</code> — Specify a server other than the default. <code>/editor:command</code> — Specify an alternate editor program. <code>/system</code> — Specify the system-default login script. <code>/[no]temp</code> — Indicate whether or not to use a temporary file for editors which do not support UNC file names. <code>/[no]os2</code> — Indicates whether or not to use OS/2-specific login script files. <code>/perm</code> — Permanently alters <code>edscript</code> to use the specified <code>/editor:command</code> , <code>/[no]temp</code> , and <code>/[no]os2</code> settings.
--------	--

Examples

1. Use the following command to specify user `bungee` and the server `nwsproing`:

```
edscript /user:bungee /server:sproing
```

2. Use the following command to specify editor program `edscript`:

```
edscript /editor:edscript
```

3. Use the following command to specify the system-default login script:

```
edscript /system
```

4. Use the following command to use a temporary file for editors that do not support UNC file names:

```
edscript /temp
```

5. Use the following command to avoid using OS/2-specific login script files:

```
edscript /noos2
```

6. Use the following command to permanently alter edscript to use the specified /editor:command, /[no]temp, and /[no]os2 settings:

```
edscript /perm
```

login

This command logs in to a NetWare file server.

Location

\$TNHOME/usr/lib/pcbin

Usage

login [*option*...] *server*[/*user*]

Options

option	Specify one of the following: /Clearscreen — Clears your workstation screen after you enter your password. /Noattach — Invokes a login script without severing your current connections. Use this option with /Script=scriptname. /Script=scriptname — Overrides the system and user login scripts with a new login script if you include it right after login. Use this option with /Noattach.
server	Specify the name of the NetWare server to which you want to connect.
user	Specify the user name you want to use for connection to the server, if other than your current user name.

Example

Use the following command to connect to server plate as user fork and clear your screen after you enter your password:

```
login /Clearscreen plate/fork
```

logout

This command logs you out from one or all servers.

Location

```
$TNHOME/usr/lib/pcbin
```

Usage

```
logout [server]
```

Options

(no options)	Log out of all currently-connected servers.
server	Specify the name of the NetWare server to which you want to disconnect.

Examples

1. Use the following command to log out of all currently-connected servers:

```
logout
```

2. Use the following command to log out of the server fish:

```
logout fish
```

map

This command allows you to redirect a drive to a directory on a NetWare file server, delete a mapped drive, or view your current drive mappings.

Location

`$TNHOME/usr/lib/pcbin`

Usage

To map a local drive to a directory on a server:

```
map [option...] drive: server/volume:[\\directory]
```

To delete a mapped drive:

```
map DEL drive:
```

To show mapped drives:

```
map [drive:]
```

Options

(no options)	Show all mapped drives.
option	Specify one of the following: ROOT — Map a drive to a fake root directory on the server. INSert[=n] — Change search drive mappings.
drive	Specify a local drive.
server	Specify the name of the NetWare server.
volume	Specify the volume on the server to which you want to map.
directory	Specify the path under volume to which you want to map.

Examples

1. Use the following command to show all mapped drives:

```
map
```

2. Use the following command to map the E drive to a fake root directory on server tongue and volume cheek:

```
map ROOT E: tongue/cheek:
```

3. Use the following command to change the search drive mappings for the F drive on server tooth and volume claw:

```
map INSert F: tooth/claw:  
Use the following command to map the G drive to the directory force/field  
on volume five of server jet:  
map G: jet/five:\\force/field
```

slist

This command lists active NetWare servers. If you include the wildcards "*" or "?", servers whose names match the patterns appear in the list. The display pauses automatically after each 20 servers.

Location

```
$TNHOME/usr/lib/pcbin
```

Usage

```
slist [server] [/Continuous]
```

Options

(no options)	List all active NetWare servers on the network.
<i>server</i>	Specify the pattern of server names to list.
/Continuous	Display the list without pauses.

Examples

1. Use the following command to list all active NetWare servers on the network and display the list without pauses:

```
slist /Continuous
```

2. Use the following command to list the server green, if active:

```
slist green
```

nettime

This command displays the system time on a SMB server and synchronizes local computer time with the server system time.

Location

```
$TNHOME/usr/lib/pcbin
```

Usage

To use this utility, map a volume on the server whose time you want to display to a local drive. Then run this command:

```
nettime drive: [/S]
```

Options

drive	Specify the mapped server drive.
/S	Synchronize the local time with the server time.

Examples

1. Use the following command to display the system time on the SMB server mapped to the E drive:

```
nettime E:
```

2. Use the following command to synchronize the local time with the time of the server mapped to the E drive:

```
nettime E: /S
```


NetWare Login Scripts

NetWare login commands process login scripts. You can write a server-wide login script in the file `net$log.dat` under the public directory of the sys volume. Users may have user-specific login scripts in their mail directory in the sys volume, named after the user ID numbers. The login program processes the user-specific login script, if it exists, after it processes the server-wide login script. Use the TAS-supported “edscript” on page 237 “edscript program or the NetWare `syscon` program to create, access, and modify both server-wide and user-specific login scripts.

The server ignores blank lines in login scripts. All other lines must begin with one of the commands listed in the “Login Program” on page 247 section. You can use all of these entries in both the server-wide and user-specific login scripts. You need to know notational conventions and identifier variables to write login scripts:

- “Notational Conventions” on page 245
- “Identifier Variables” on page 246

Notational Conventions

1. In a NetWare path statement, the server sees no difference between a slash (/) and a backslash (\).
2. You may replace any path variable with a drive letter, volume name, directory, or subdirectory, as appropriate, in the following format:

`{drive|volume}:/dir/`

3. Include full path specifications unless you know a short one will suffice.

4. All commands and variables have case-insensitivity.
5. All commands end when you press Enter. Some commands in this document continue to a second line. If you type a command in syscon, it wraps to the next line. Do not press Enter to start the second line; if you do, login sees it as a new command.

Identifier Variables

Format each identifier variable in upper-case and precede it with a percent sign (%).

DAY	day number (from 01 to 31)
DAY_OF_WEEK	day name (from Sunday to Saturday)
MONTH	month number (from 01 to 12)
MONTH_NAME	month name (from January to December)
NDAY_OF_WEEK	weekday number (from 1 to 7; 1=Sunday)
SHORT_YEAR	last two digits of year (96, 97, and so on)
YEAR	all four digits of year (1996, 1997, and so on)
AM_PM	part of day (AM or PM)
GREETING_TIME	time of day (morning, afternoon, evening)
HOUR	hour in 12-hour scale (from 1 to 12)
HOUR24	hour in 24-hour scale (from 00 to 23)
MINUTE	minutes (from 00 to 59)
SECOND	seconds (from 00 to 59)
FULL_NAME	user's full name
LOGIN_NAME	user's login name
MEMBER OF group	user's assigned group

NOT MEMBER OF group	group to which user does not belong
USER_ID	number assigned to user for mail and other directories
FILE_SERVER	server name
NETWORK_ADDRESS	network number of the cabling system (8-digit hexadecimal)
DOS_REQUESTER	version of the DOS NetWare shell (1.02, 2.x, 3.x, 4.x)
MACHINE	type of computer (IBM-PC)
OS	type of DOS on the workstation (MSDOS, DR DOS)
P_STATION	workstation's Ethernet address (12-digit hexadecimal)
SHELL_TYPE	version of the DOS NetWare shell (1.02, 2.x, 3.x, 4.x), same as DOS_REQUESTER
SMACHINE	short name for computer type (IBM)
STATION	PC connection number
%n	nth parameter of command line
variable	DOS environment variable, such as <path> Enclose in angle brackets. To use variable in a map command, insert a percent sign in front of the variable, as in map s5:=%<WP>.

Login Program

TAS's `login.exe` file processes the subset of Novell's NetWare login scripts commands. In login scripts, the variable %0 always refers to the current server name, and the variable %1 always refers to the current user name. Other parameters on the command line reference as %2 through %9.

The TAS login utility cannot run all login scripts that can run under Novell's NetWare login utility. TAS only supports utilities for DOS VLM/NETX clients.

The login program also has the following options:

/Script filename	Overrides the system and user login scripts, processing the file name instead.
/Noattach	Invokes login scripts without logging out of the current server.
/Clearscreen	Clears the screen as soon as the user types the password.

You can also use the TAS PC client utility login to log in to a NetWare server. For more information, see Chapter 5.

This section covers the following commands:

- “#” on page 249
- “attach” on page 250
- “break” on page 250
- “comspec” on page 251
- “display” on page 252
- “DOS verify” on page 253
- “drive” on page 254
- “exit” on page 255
- “display” on page 252
- “DOS break” on page 252
- “fire phasers” on page 255
- “goto” on page 256
- “if...then” on page 257
- “include” on page 258
- “map” on page 260
- “machine” on page 259
- “set” on page 263
- “shift” on page 264
- “pause” on page 262
- “remark” on page 262
- “write” on page 265

#

This command executes a program external to the login script. Include command parameters as needed, just as when you execute such a command from the DOS command line. Command control returns to the login script after the external command executes.

Usage

```
# [path] filename [parameter]
```

Options

<i>path</i>	Specify the path to the file.
<i>filename</i>	Specify the base name of a file with a .bat, .com, or .exe extension. You need not include the extension unless two files with the same base name reside in the same directory.
<i>parameter</i>	Specify the command parameter.

Examples

1. Use the following command to verify the system time:

```
# time
```

2. Use the following command to redirect a printer port to a network print queue:

```
# capture q=laser
```

3. Use the following command to run a batch file to check your “to do” list:

```
# sys:/home/janet/todo.bat
```

attach

This command connects a client to another server.

Usage

```
attach [servername[\username]]  
attach ident_var
```

Options

<i>servername</i>	Specify the name of a remote server. It defaults to the user name for the current server.
<i>username</i>	Specify a valid user name at servername.

Examples

1. Use the following command to attach to the server called `support` as the current user name:

```
attach support
```

2. Use the following command to attach to the server called `support` as user name `pierce`:

```
attach support\pierce
```

break

This command enables or disables termination of login script execution. A break entry does not affect the DOS break state.

Usage

`break {on|off}`

Options

on	Enable the option to terminate execution of the script by pressing Control-p or Control-c at any point after the break on entry and before a break off entry, if included. The server does not save type-ahead keyboard input in the keyboard buffer when you use this option.
off	Disable the option to terminate execution of the script. If you set break to off, you cannot set it back to on.

Examples

1. Use the following command to enable the option to terminate execution of the script by pressing Control-p or Control-c at any point after the break on entry and before a break off entry:

```
break on
```

2. Use the following command to disable the option to terminate execution of the script:

```
break off
```

comspec

This command specifies the directory where the DOS `command.com` command processor resides. A user can run DOS from a network directory by mapping a search drive in the login script to that directory and adding the `comspec` entry. Be sure `comspec` points to the same version of `command.com` as the client uses when it boots.

Usage

`comspec=[path]command.com`

Option

path	Specify the path to command.com.
------	----------------------------------

Example

Use the following command to specify `/tmp/` as the directory where `command.com` resides:

```
comspec=/tmp/command.com
```

display

This command displays a text file on the screen when a user logs in.

Usage

```
display [path]filename
```

Options

path	Specify the path to the file.
filename	Specify the name of the file you want to display.

Example

Use the following command to display the text file `begin.txt` at `/tmp` when a user logs in:

```
display /tmp/begin.txt
```

DOS break

This command sets or overrides the state of the DOS `break` check.

Usage

DOS break {on|off}

Options

on	Enable termination of program executions other than login script commands by pressing Control-p or Control-c.
off	Disable termination of program executions other than login script commands, the default. If you set DOS break to off, you cannot set it back to on.

Examples

1. Use the following command to enable termination of program executions other than login script commands:

```
DOS break on
```

2. Use the following command to disable termination of program executions other than login script commands:

```
DOS break off
```

DOS verify

This command verifies that data copied by the DOS `copy` command copies accurately. If you use the `/v` option with each DOS `copy` command, or if you use Novell's `ncopy` command, you do not need to use this command.

Usage

DOS verify {on|off}

Options

on	Ensure that the DOS copy command verifies data during each copy so you do not have to use copy /v or ncopy.
off	Cause the DOS copy command not to verify data during each copy, the default.

Examples

1. Use the following command to ensure that the DOS copy command verifies data during each copy so you do not have to use copy /v or ncopy:

```
DOS verify on
```

2. Use the following command to cause the DOS copy command not to verify data during each copy:

```
DOS verify off
```

drive

This command specifies the default drive.

Usage

drive *drive*:

Option

drive	Specify a drive letter. This option defaults to your first network drive, usually assigned to the login directory.
-------	--

Example

Use the following command to specify the D drive as the default drive:

drive D:

exit

This command terminates execution of the login program and, if you wish, executes an external program. Using `exit` at the end of the system login script prevents user login scripts from executing. On termination of the command, control does not return to the script.

In some cases, you can use `exit` in an `if...then` entry to terminate the script. If you do, use `exit` on a separate line.

Usage

```
exit [``command``]
```

Option

command	Terminate the script and execute the command.
---------	---

Example

Add the following entry to the end of user `richard`'s login script to cause his client to remind him every Thursday to do his status report:

```
if day_of_week = ``thursday`` then exit ``edit  
s:/richard/status.txt``
```

fire phasers

This command emits a sound.

Usage

```
fire phasers n times
```

Option

n	Specify the number of times, from 1 to 9, that you want the sound to emit.
---	--

Example

Use the following command to fire the phasers two times during login on every day except Friday and fire them five times on Friday:

```
if day_of_week = ``friday`` then fire phasers 5 times
else fire phasers 2 times
end
```

goto

This command, similar to the DOS `goto` batch command, alters the normal sequence of script command processing. The `goto` command does not work with `if` statements.

Usage

`goto label`

Option

label	Specify the location to which the point of control transfers in the login script. The label must exist elsewhere in the script on a line by itself, followed by a colon and nothing else. Do not include duplicate labels or use <code>goto</code> to go to a point within an <code>if</code> loop.
-------	---

Example

Use the following command to specify A as the location to which the point of control transfers in the login script:

```
goto A
```

if...then

This command executes one or more commands under specified conditions. You may nest `if...then` statements within other `if...then` statements up to nine levels deep.

Usage

```
if condition [and|or [condition]] then
  command
  [command]
[else]
  [command]
  [command]
[end]
```

Options

condition	Specify a conditional clause or equation involving any of the identifier variables listed in “Identifier Variables” on page 246 “Identifier Variables. Enclose condition equation values in quotation marks. You may use the following operators in conditional equations: = “equals” <> “does not equal” > “is greater than” >= “is greater than or equal to” < “is less than” <= “is less than or equal to”
and	Specify all of the surrounding conditional clauses. Use commas to separate conditions in three-part conditional clauses
or	Specify one of the surrounding conditional clauses. Use commas to separate conditions in three-part conditional clauses
command	Specify a login script command that you want to execute if circumstances meet the specified condition. Place consecutive commands in the then portion on separate lines.

else	Restrict the instances of the if...then statement. If you only specify one command after else, the end statement becomes optional. This option must occupy its own line.
end	Conclude the if...then sequence. If you specify only one command after the else or if the if...then statement only consists of one logical line, the end statement becomes optional. The end statement must occupy its own line. In a nested if...then statement, end applies only to the current level. Use end for every level that requires it.

Note

The DOS *environment* variable does not work properly as a condition for an `if` statement for the TAS `login.exe` program.

Example

Use the following sequence to map `q:=nwsolaris/sys:/public/q&a` to members of the support group, terminate the login script on Saturdays and Sundays, send the message "You spend 1/7 of your life on Monday. Have a nice day. :-)" on Mondays, send the message "Department meeting at 10:00." to members of the support group on Fridays with an alert of three sounds, and send the message "Happy birthday, Levi!" on October 29:

```
if member of support then map q:=nwsolaris/sys:/public/q&a
if day_of_week = saturday or day_of_week = sunday then exit
if day_of_week = monday then write You spend 1/7 of your life on Monday.\nHave a nice day. :-)
end
if day_of_week = friday then
if member of support then
write Department meeting at 10:00.''
fire phasers 3 times
pause
end
end
if month = `10`, day = `29`, and login_name = `levi` then write `Happy birthday, Levi!`
```

include

This command, similar to the DOS `call batch` command, executes a sub-script from within the login script. Sub-scripts can only contain commands valid in login scripts, including other login scripts. You can use any text editor or word processor to create and edit subscripts, as long as you save the files in text-only format.

You may nest sub-scripts as memory allows. When a sub-script completes execution, control returns to the script that called it. You must have at least “read” access to the sub-script.

Usage

`include [path] filename`

Options

path	Specify the path to the sub-script file.
filename	Specify the name of the sub-script file.

Example

Use the following command to execute the sub-script `monday.bat` at `c:\` in an `if...then login` script:

```
if day_of_week = ``monday`` then include c:\monday.bat
```

machine

This command sets the DOS machine name of the client PC, since some applications require the PC to have a name. You may also set the machine name in the PC's `net.cfg` file.

Usage

`machine = name`

Option

name	Specify the DOS machine name of the client PC. Use no more than 15 characters.
------	--

Example

Use the following command to set the DOS machine name of the client PC to cinnebar:

```
machine = ``cinnebar``
```

map

This command redirects, or “maps”, drives to network directories.

Usage

```
map display {on|off}
map errors {on|off}
map [root] [ins] drive:=path
map drive:=drive:
map n path
map del drive:
```

Options

map display {on off}	Specify whether drive mappings display on-screen as they map during login. This usage defaults to display on.
map errors {on off}	Specify whether drive mapping errors display on-screen as they map during login. This usage defaults to map errors off.
map [root] [ins] drive:= <i>path</i>	Map a drive to a network directory.
root	Make <i>path</i> the virtual root of drive. Use this if you do not want users to access directories above <i>path</i> or if an application expects to find files in a certain relation to the root of a drive.
ins	Insert <i>path</i> into the DOS PATH environment variable.

drive	Specify any valid local or network drive letter or search drive number. You can also use the letter s followed by the number n, where n represents the desired position in your search path for the path. This also assigns the next available drive letter to the mapping, starting with Z and working backward.
path	Specify the name of server and the volume, or the drive letter and the full directory path on the drive or server. This specification defaults to the current server.
map drive:=drive:	Temporarily map a local drive, typically a drive letter such as F or G, to a network directory. You cannot access the local drive until you delete the mapping.
map n path	Map the next available network drive to the server, volume, and directory specified in path.
map del drive:	Delete a map from a local drive.

Examples

1. Use the following command to display drive mappings on-screen as they map during login:

```
map display on
```

2. Use the following command to keep drive mappings from displaying on-screen as they map during login:

```
map display off
```

3. Use the following command to display drive mapping errors on-screen as they map during login:

```
map errors on
```

4. Use the following command to keep drive mapping errors from displaying on-screen as they map during login:

```
map errors off
```

5. Use the following command to map the D drive to the /tmp directory:

```
map D:=/tmp
```

6. Use the following command to map local drive E to the directory /objects:

```
map E:=/objects:
```

7. Use the following command to delete the map from the local drive F:

```
map del F:
```

pause

This command, similar to the DOS `pause` batch command, temporarily stops execution of the script. Use `pause` to give the user time to read a message before it scrolls off the screen. The message `Strike any key when ready...` appears on the screen. The next keyboard input resumes execution of the script.

Usage

```
pause
```

Example

Use the following command to temporarily stop execution of the script:

```
pause
```

remark

This command inserts explanatory remarks in the script.

Usage

```
rem [text]  
remark [text]  
* [text]  
; [text]
```

Options

rem, remark, *, ;	Insert an explanatory remark. These designations must occur at the beginnings of lines.
text	Type the text you want to insert. Login ignores this option; the text does not appear on-screen.

Example

Use one of the following commands to insert the remark “Double-check this sequence.”:

```
rem Double-check this sequence.  
remark Double-che  
ck this sequence.  
* Double-check this sequence.  
; Double-check this sequence.
```

set

This command, similar to the DOS set command, declares a value for a DOS environment variable.

Usage

```
[temp] set varname = ``value``
```

Options

temp	Change the environment variable for just the duration of the login script execution.
varname	Specify the name of the environment variable that you want to create or change.
value	Specify the value you want to give the variable. Note that unlike the DOS set command, you should enclose it in double quotation marks.

Example

Use the following command to change the value the environment variable file to value doc.txt for only the duration of the login script execution:

```
temp set file = `doc.txt`
```

shift

This command changes the login command parameters referenced by %n variables in the script. With the login command, the login script can refer to the server name and user name as %0 and %1. You can include other parameters on the command line, referring to them as %2, %3, and so on.

Usage

```
shift [n]
```

Option

n	Specify the number of shifts to the left you want to make on a reference to a command line parameter, from 0 to 9. This option defaults to 1.
---	---

Example

Use the following command to make one shift left to a reference to the command line parameter:

write

This command displays messages during login. `text` represents the message to display on the screen. Include applicable identifier variables or any of the commands in Options table.

Usage

```
write text
```

Option

text	The message you want to display. Include any of the following options: \r — Carriage return. \n — New line. \ " — Embedded quotation mark. \7 — Beep sound. ; — Join.
------	--

Example

Use the following command to greet a user:

```
write Good %GREETING_TIME, %LOGIN_NAME
```


Troubleshooting

This chapter explains how to correct problems with the TAS system. It includes instructions for collecting diagnostic information for customer support engineers using `trace` and `csr.tn`, as well as a compilation of common error messages that users might see and instructions for resolving them. This chapter includes the following sections:

- “General Troubleshooting” on page 267 — A systematic approach to isolating problems.
- “Realm-Specific Error and Activity Logs” on page 271 — Information on generating records of errors and activity, at the realm level.
- “Error Messages and Solutions” on page 272 — A list of error message with instructions for resolving them.
- “Error Conditions and Solutions” on page 279 — Solutions to error conditions not necessarily accompanied by error messages.
- “Contacting Sun Technical Support” on page 283 — Information needed to receive comprehensive technical assistance.

General Troubleshooting

You can resolve many problems that occur in the TAS system if you start from the simplest possible causes for an error and work towards the more complex. Such a systematic approach helps you develop a theory, test it, and isolate and correct the problem.

The list of questions below provides a starting point for resolving problems this way. They address the following categories:

- “Initial Connection” on page 268

- “LM-NT-OS/2 Connections” on page 268
- “NetWare Connections” on page 269
- “AppleTalk Connections” on page 270

Initial Connection

Does the user have a valid UNIX account?

To make sure that the server recognizes the user name, attempt to open a telnet session from the client, with that user name.

If you cannot complete a process from a PC, can you complete it from UNIX?

If you can perform the process from UNIX, you may have incorrect attach point configuration or client connection—but keep in mind that you cannot replicate all actions performed from a PC, on UNIX. Open a telnet session and try the process from UNIX. For example, if you have printing problems, telnet to the server and use the `lpr` command to send a file to the printer. If the action works under UNIX, check the client and server configurations.

Did you correctly configure the transport protocol?

Check this using another program. For example, to check the TCP/IP configuration, use `ping` from UNIX.

LM-NT-OS/2 Connections

Do the client and server reside on different subnets but connect via NetBIOS-over-NetBEUI?

If they do, the client cannot connect to the server because this protocol setup only works within the subnet. You must have NetBIOS-over-TCP/IP to connect a client and server on different subnets. NetBIOS-over-NetBEUI does not route.

Does the client attempt to access a service using NetBIOS-over-TCP/IP on the other side of the router?

In order for a client to find a NetBIOS name on the other side of a router, it must have the ability to map an IP address to that NetBIOS name. You can accomplish this by using static tables, Windows Internet Naming Service (WINS), or Enterprise Name Server (ENS) to configure the client to resolve the service name to its associated IP address.

Does the client use the same SMB dialect as the server?

Some older client software does not use the extended SMB protocol in the same way as the server. To force the client to revert to the core protocol, use this command:

```
tnservice -M -r NB -s servicename -a smb-protocol-level=on
```

NetWare Connections

Do IPX network numbers correspond to interface frame types?

For the server network interface, make sure that you have configured the correct frame type and associated it with the correct hexadecimal NetWare network number. To find out the correct frame type/network number combination, look at Novell server configurations or run `ipxprobe` after shutting down IPXd. If your network does not contain a Novell server, you can use any hexadecimal number unique for the frame type.

TotalNET IPX supports full routing, which means that you can configure it to use more than one network interface, and it supports multiple frame types on each interface. TAS treats a single physical network as a collection of distinct logical networks using distinct interface frame types and performs routing among the logical networks just as it does their physical networks, so each frame type on the system must associate with a different net number.

You can configure each interface for a number of frame types with corresponding network numbers. For instance, `interface_1` might have `frametype_x` with `netnumber_x` and `frametype_y` with `netnumber_y`, and `interface_2` might have `frametype_x` with `netnumber_x` and `frametype_z` with `netnumber_z`. You must use a unique net number for the internal frame type in the NetWare realm. Never delete the internal frame type.

To check frame types and network numbers from the UNIX command line, use the command `tniface -R -n tnipx`.

Can you see the server with “slist”?

To view all of the NetWare servers currently active on the network, access Network Neighborhood or, in DOS, use the slist command. If the NetWare server you need does not appear on the slist list, advertisements from the server do not reach your client. You may have a disabled server or a problem with Service Advertisement Protocol (SAP) advertisements. To see if you enabled your server, click Status at a Glance.

If you suspect a problem with SAP advertisements, contact a Syntax Technical Support engineer at support@syntax.com for further assistance. Before contacting Syntax, see “Contacting Sun Technical Support” on page 283.

Does the server process the client utilities?

Different versions of login programs used by NetWare vary greatly. For example, if you wish to use Novell 3.12 utilities to connect to a NetWare realm service, you must turn on client encryption for that service, since the 3.12 utilities only send encrypted passwords. You do not need to turn on password encryption for clients of versions later than 3.12, however, because they can send clear-text passwords.

Syntax provides login utilities for the NetWare realm in `$TNHOME/NW/sys/login`. They provide similar functionality to programs used by NetWare. To turn on client encryption, use the “tnservice” on page 174 command.

AppleTalk Connections

Does each file have three parts?

UNIX stores Macintosh files in three forks: the data fork, the resource fork, and the finder information fork. The data fork contains the actual data contained in the file, the resource fork indicates the application to launch when you open the file, and the finder information fork maintains data about the file’s creator, type, location on the desktop, and icon.

TAS stores these parts in separate directories. When you create a file from a Macintosh client, TAS writes the data fork to the current directory, the resource fork to the subdirectory `.tnatr:reso-fork`, and the finder information to the file `.tnatr:intf`. If TAS cannot locate all of these pieces, the file may not launch correctly. In versions of TAS previous to 5.x, TAS writes the data fork to the current directory, the resource fork to the `.resource` directory and the finder information to the `.finderinfo` directory.

Does the finder information map file exist and contain the correct information?

The finder maintains information about files, such as the file's creator, type, location on the desktop, and icon. When the server cannot locate finder information, it attempts to generate reasonable default values for this information based on data in the map file. These values may not contain the correct information.

An AppleTalk map associates file suffixes with Macintosh applications. The client operating system uses these associations to determine which application it should invoke when it accesses a file.

To check mapping configuration, use the "tnsuffix" on page 200 "tnsuffix command.

Do the Macintosh and PC versions of the program share the same data format?

Occasionally, these platforms cannot share files of the same program.

Realm-Specific Error and Activity Logs

TAS generates a number of logs that you can use to monitor and manage the TAS system. Within each realm, a log generates during startup, and error messages sent within the realm append to the log as they occur.

You can enable an activity log that records information about all connections to file services; do so by enabling the log activity attribute when you configure a file service. This attribute applies per service. The report generated by `csr.tn` includes the activity log.

Error Logs

Realm error logs reside in each realm's folder. The NetWare realm's log resides in `$TNHOME/NW/log`, the LM-NT-OS/2 realm's log resides in `$TNHOME/NB/log`, and the AppleTalk realm's log resides in `$TNHOME/AT/log`. These logs provide startup information for the realm and error messages generated during startup in a common log format. If a client cannot connect to a service in a particular realm, you can check the log for that realm for TAS startup errors.

Activity Logs

To maintain a log of connection activity for a realm, you must enable the activity attribute on each relevant file service. This attribute applies per service. The activity log file `activity.tn` then registers the following statistics whenever service terminates in the realm:

- UNIX account name
- server machine name
- server start time
- file service realm
- client machine name
- client network address
- number of transactions requested
- number of kilobytes read
- number of kilobytes written
- number of kilobytes printed
- total connection time

To enable activity logs from the UNIX command line, open a telnet session to the server and use the following command:

```
./tnservice -M -r NB -s service -a activity=on
```

Error Messages and Solutions

This section provides solutions to error conditions accompanied by error messages. The table below details the exit codes that appear as tn-utilities error messages. The rest of this section lists causes and solutions for other common error messages.

0	Success
1	Usage
2	Incompatibility
3	Invalid command line
4	General memory allocation
5	Disabled system

6	Invalid realm, system, or service
7	Application Interface error
8	System call failure
9	C library failure
10	Invalid characters in volume, for specified realm
11	Invalid characters in service, for specified realm
12	Service name too long for specified realm
13	Denied permission; superuser access only

Access denied

The user does not have privileges to either read a file, write a file, execute a program, or search a directory.

Cannot access a directory

The NetWare client cannot access a UNIX directory. Verify that the directory has the execute permission bit set and resides below the virtual root of the volume.

Cannot access network drive

The Windows interface on the network has one of these problems:

- The correct driver has not loaded. Under the Windows Setup program on the client, check the Network option and verify that the correct network driver has loaded. For example, for a Microsoft client, the words Microsoft Network should appear. If they do not, click Change System Settings on the Options menu, then select the correct driver from the list under Network.
- The drive connected using the Windows file manager and the existing file manager saved the settings. The user chose, under Windows Control Panel->Networks, to restore all connections at startup, and consequently used the drive letter for DOS to make a different redirection.

Cannot create socket on server

The system socket call failed on TAS startup for one of the following reasons:

- You did not shut down NetBIOS. If the UNIX operating system contains NetBIOS, shut it down before starting TAS.
- The system has used all of its sockets.
- Another process has claimed one of the reserved NetBIOS ports.

Cannot log in to server as supervisor

The server uses the UNIX operating system to authenticate users, so the user account must exist on the UNIX host before you can log in. A Novell server's system administrator defaults to supervisor; the UNIX equivalent defaults to root. Typically, you must log in as root to administer the UNIX operating system.

Incorrect password

The server has not validated the user's name or password. Make sure the name and password fulfill the following requirements:

- Correct spelling.
- Correct format for upper-case characters. A tilde (~) must precede each one.
- Satisfaction of the following system limitations:
 - NetBIOS has a 14-character maximum.
 - NetWare has a 30-character maximum with TAS.
 - AppleTalk has an 8-character maximum.
 - Users with account names or passwords longer than eight characters may have difficulty making connections. On many UNIX systems, only the first eight characters of the password matter, so you may establish a connection by providing only the first eight characters of the password.
 - On systems with password aging supported and enabled, the password may have lost validity. Have the user log in to the UNIX host at the console or with a terminal emulator such as telnet and update the password.
 - The user name lists as restricted.

Incorrect response from network

The name discovery phase succeeded, but the system rejected the connection request, for one of the following reasons:

- The user made a connection attempt to a TAS host immediately after the user's previous connection terminated ungracefully, such as by client PC reboot, and the connection definition file still exists. Run `tnck`.
- A user attempted to connect to a service with an invalid command in its service definition file.
- You caused TAS to reject new connection attempts. To accept services, use the "tnaccept" on page 131 command.
- TAS has reached its user limit. Multiple connections from a single client to the same service name count as a single user, but each connection to a new service name, even if it comes from the same client, counts as a separate user. Contact your Syntax representative at (253) 838-2626 to order user licenses.
- The time limit on your evaluation copy of TAS has expired.

Invalid connections in "tninfo" report

The output of `tninfo` shows a connection that does not exist. The `tninfo` report normally shows only one connection per Ethernet address. Occasionally, a duplicate may list when the server has not yet recognized a connection termination. An ungraceful disconnection by the client, as when the client turns off the PC or reboots without logging out, usually causes this.

To detect dead connections, enable the keepalive function for the LM-NT-OS/2 and NetWare realms. This tells the server to send keepalive packets, similar to Novell watchdog packets, to determine whether clients remain attached. After sending the first keepalive packet, the server sends another packet every minute for 10 minutes. If it receives no response during this time, the server assumes that the connection died and updates the connection database accordingly. The client no longer lists in the `tninfo` report.

To enable keepalives, use the following command, where *n* represents the number of minutes for the server to wait after a connection establishes before sending the first keepalive packet:

```
tnservice -M -r NW -s nwera:file -a keepalive=n:
```

Invalid drive was specified

A problem exists with the drive letter in a client command. This can occur when a client attempts to redirect a local drive, such as a diskette drive or a hard drive partition.

Network device type incorrect

The user has attempted to redirect either a drive to a print device or a printer port to a directory.

Network path not found

The client did not receive a response from a server when it broadcast a request for a NetBIOS name, for one of the following reasons:

- The user supplied an invalid service name when attempting to connect to a TAS host. Use the “tostat” on page 34 command to make sure the service status contains the correct service name.
- When a client attempted to connect to a TAS host, the named service did not run. Use the “tostat” on page 34 command to see if the service status runs. If it does not run, restart LM-NT-OS/2 services.
- The user misspelled the server name. Use tnservice -l to verify the spelling.
- The system has reached its NetBIOS session limit. Check the initialization file of the client protocol software to verify that the system allows sufficient NetBIOS sessions.
- The server cannot run NetBIOS.
- The NBname daemon does not run. NBname exits if it detects another network node with the same NetBIOS name. TAS then ignores name requests. Check the NetBIOS error log \$TNHOME/NB/log on the host for an error message. Change the NetBIOS name, if necessary, and restart TAS with the “tnshut” on page 141 and “tstart” on page 142 commands.
- The server and client reside on different networks—they reside on different sides of a router or a bridge—and NetBIOS broadcasts do not propagate. Use the TAS Enterprise Name Server (ENS) by using the “tntransport” on page 206 command. Alternatively, you could configure routers to propagate broadcasts using a p-node NetBIOS setup, but this substantially increases network traffic and lowers network capacity.
- IP addresses have incorrect formats or content. Check the IP addresses with the “tniface” on page 153 command. On the server, you can find an IP address using the ifconfig command. The address should have four segments separated by periods, as in the following example, where A, B, C, and D represent sets of decimal numbers:

A . B . C . D

Determine the address with this table:

If A is:	the network number is:
< 128	A
128 - 191	A.B
> 191	A.B.C

- The network mask for the client does not match that for the server. This table gives the default network masks for IP addresses:

If A is:	the network mask is:
< 128	255.0.0.0
128 - 191	255.255.0.0
> 191	255.255.255.0

- The broadcast addresses cannot work together. The original TCP/IP did not define a way to broadcast packets on the Internet. When this became desirable, enterprising corporations developed several different mechanisms, not all of which interoperate. To try a different broadcast style on the PC, see the client TCP/IP documentation.

No servers listed by “slist”

In a PC's `net.cfg` file, you can list several frame types to use over the network card. The network uses only the first entry when transmitting packets. If a server host does not have the configuration to use the same type of frame as the client, the client cannot see that server; the server does not list from the `slist` utility or on the Windows NetWare interface.

Remote computer not listening

This problem may occur with an inactive `NBdaemon` process. Use the `tnstat` on page 34 command to verify that you started `TAS`. If you have not, use the `tnstart` on page 142 command.

Routing information database corrupted on large internetwork

NetWare servers broadcast routing information every 60 seconds using the Routing Information Protocol (RIP), and they broadcast service information every thirty seconds using the Service Advertising Protocol (SAP). On a very large internetwork or wide-area network, the RIP or SAP database can grow so large that the time necessary to download it exceeds the interval between downloads, especially if you have a low-speed WAN link. This can cause the apparent disappearance of volumes, printers, or servers or extreme delays in packet re-routing, if a node fails.

Novell will replace RIP and SAP with NetWare Link State Protocol (NLSP). NLSP associates multiple network interfaces with a single network number, distributing traffic across multiple network segments. If a node fails, NLSP can quickly establish an alternate path. NLSP builds a map of the network incrementally and sends updates only as needed. NetWare 3.11, 3.12, 4.11, and 4.12 servers support NLSP. They can still work with existing SAP/RIP servers.

Server not found

The name-discovery phase succeeded, but the system cannot find the requested resource on the server, for one of the following reasons:

- A user attempted a connection to a TAS host with an invalid UNIX name. Verify the validity of the user name. Check the spelling and case. Make sure a tilde (~) precedes each upper-case character.
- You set the NetBIOS naming scope incorrectly. Check the naming scope with the “tntransport” on page 206 command. If you do not set the NetBIOS Name scope attribute, TAS ignores the client’s naming scope.
- When a user attempted a connection to a TAS host, an attach point defined in TAS’s configuration of .profile.file in the user’s home directory matched a UNIX user name or directory. Change the name of the attach point with the “tnattach” on page 151 command and retry the connection.
- The user attempted connection to a directory with a user limit, and the directory has reached its limit. Try again later.
- A user attempted to establish a print service connection to a nonexistent printer. Verify that either the server configuration contains a reference to the printer, with the “tnservice” on page 174 command, or the user’s .profile.file contains a prdefault or printer command for the requested printer.
- An attempted extended connection contains a path to a nonexistent directory. Verify that the directory exists and try again. Stop and restart TAS if you modify the directory configuration with the “tnshut” on page 141 and “tnstart” on page 142 commands.

Too many redirections

The user has attempted to exceed the number of connections allowed by the client computer's network operating system, NetBIOS, or TCP/IP. Update `nb_sessions`, `tcp_sockets`, or `udp_sockets` entries in the `net.cfg` file to allow more redirections. If you do not want to allow more redirections, cancel a redirection, then try again.

Unknown board ID

The age of the network card driver exceeds the age of the physical network board. Replace the board interface software with a newer version.

Error Conditions and Solutions

This section provides solutions to several error conditions not necessarily accompanied by error messages.

Application on UNIX server inaccessible

The user cannot execute a program residing on a TAS host, for one of the following reasons:

- The application's file permissions deny access to the user. Log in as the owner of the directory that contains the application, or as root, and correct the file permission with the "tntservice" on page 174 command. Remember, DOS programs need to have UNIX read permission.
- The application has a attribute that tells DOS the drive on which it resides, but the redirected drive uses a different letter.

Compilation problems in DOS window

Compiling programs on a network drive in a Windows DOS prompt window can cause data corruption or dropped connections. For Windows for Workgroups and Windows 3.1, add the following line in the section labeled [386Enh] in the PC's Windows `system.ini` file:

```
InDOSPolling=True
```

Connection failure

Some network boards have more than one cable connection, and some have transceivers on their boards. Make sure the physical hardware jumpers can use the same connection as the software settings.

Dead sessions not dropped

When a user turns off or reboots a client PC, the network connection breaks. If this happens during a data transfer, TAS notices immediately and terminates the appropriate process. If it happens when no traffic passes between client and server, TAS notices only after a few minutes. This timeout period, dependent on the host system, typically lasts about five minutes. After the timeout period elapses, TAS terminates the appropriate process.

TAS, by default, relies on the host's underlying transport layer keepalives to keep track of dead sessions. If other applications, such as telnet, do not drop dead connections, the transport vendor may not have keepalives implemented. You may have configured TAS to use NetBIOS keepalives instead by changing the keepalive attribute with the "tnservice" on page 174 command.

Disconnected clients still appear connected

When a PC client terminates a session—that is, disconnects a redirected drive—the associated process attempts to close the session in an orderly fashion. This includes removing the file name.number from the directory `$TNHOME/TAS/tn/tnadb`. The name variable represents the machine name of the client PC, and number represents the UNIX ID number of the associated process.

If the client cannot remove this file, it exits without error, but when you check connection status or issue a `tnwho` or `tninfo` command, the client appears connected. Verify that `totalnet` owns the program `srm`, which does the actual removing of entries from the circuits directory, that `srm` has a mode of 4511, that `totalnet` owns the circuits directory, and that the circuits directory has a mode of 755.

DOS commands yield unexpected results

Certain DOS commands may behave unexpectedly, for the following reasons:

- Networked drives where the user does not have write permission in the root directory do not support DOS pipes—commands that include the "|" character. This occurs because a DOS pipe tries to create a temporary file in the root of the current drive.

- Some DOS applications, such as `edlin`, delete a file and then rewrite it to modify it. If the file links to another UNIX file, the link disappears, and a new, independent file takes its place.
- Some DOS commands report errors that do not seem to relate to their causes. For example, the DOS `type` command returns `Invalid path or filename:` when it receives the `Access denied` message from the server. This can happen when DOS tries to type an inaccessible file. Verify that the device, path, and file names have validity on the server and that the user has access privileges to them.

File locking errors

Files do not properly lock or unlock because the client PC rebooted and file locks did not clear. Run `tnck` to clear the locks.

Free disk space indicated incorrectly

Client disk space calculation limitations have become too great. DOS has problems with any disk device, whether redirected or local, that reports cluster sizes of 64 kilobytes or larger. Large UNIX systems or machines with, for example, several CD-ROM drives mounted, may represent drives totaling more than four gigabytes. DOS cannot handle numbers of this magnitude.

NetBIOS does not start

When NetBIOS does not start, make sure that the NetBIOS processes completely shut down. Use the `ps` command to find out whether the `NBname` or `NBdaemon` process runs even after you use shut down TAS services. This problem occurs only when a process aborts abnormally. Use the UNIX `kill` command to terminate the offending process, then use the “`tnstart`” on page 142 command.

Performance of network slow

Copying files to or from redirected drives, printing jobs over the network, or executing remote commands yields unduly slow responses, for one of the following reasons:

- The network segment has overloaded. Redesign your network to reduce the workload.
- The network generates too many broadcasts. Consider breaking the LAN into smaller segments.

- NFS generates a high amount of network traffic. If you rely heavily on NFS mounts for remote file systems, replace some by installing TAS on the remote hosts. If a client has to connect to a TAS host and file service requests route over an NFS connection to another computer, twice as much network traffic takes place than when the client connects directly to the second computer.
- TCP packet buffers or window sizes require modification. The procedure for modification on clients depends on the brand of TCP/IP installed. Check the documentation for the client's TCP/IP. In TAS, check, and possibly adjust, the values of the `rcvbuf` and `sendbuf` attributes, using the "tntransport" on page 206 command.

“Ping” does not work

This happens for one of the following reasons:

- The software settings in the configuration file do not match the physical hardware settings. Correct either one to match the other.
- The `ifconfig` command pings to the wrong address. Verify the network mask and the sending and receiving IP addresses.
- The target has an invalid IP address or does not have its TCP stack running. Check the destination computer to make sure it works properly.
- A network card with two network connectors uses a different type of network connector than the software. Adjust the hardware or software to use the proper connector.
- The network lacks one or more terminators. Install terminators at the ends of the network.

Printing problems

These happen for one of the following reasons:

- The network driver has not loaded. Under the Windows Setup program on the client, check the Network option to verify that the correct network driver has loaded.
- For Windows for Workgroups and Windows 3.1, the UNIX spooler misinterprets a PostScript file. When you print a PostScript file, your client sends a “CTRL-D” as the first character. The UNIX spooler, which cannot handle this, stops the print process and deletes the spool file. To correct this, add the following command to the client's Windows `win.ini` file under the section header `[PostScript Printer,LPT1:]`:
 - CTRL-D=0:

- In some DOS applications, print jobs do not send until the user exits the program, because the PC buffers the print job and does not spool it until the application closes.

Contacting Sun Technical Support

Contact your local Sun Technical Support Center. Sun Technical Support Centers are listed at: <http://www.sun.com/services/contacting/solution.html>.

Please have the following information ready:

- your Sun Spectrum contract or ID number
- your version of TAS
- your UNIX version
- the type of machine on which you installed TAS
- circumstances leading to the problem, including other operating systems, software, and hardware involved
- any error messages displayed or logged

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macrd

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ncprint

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nwmessage

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