

# Configuring TFTP on NMS Platforms

Document ID: 17844

## Contents

### Introduction

#### Prerequisites

- Requirements
- Components Used
- Conventions

#### Procedure for AIX

- /etc/inetd.conf – smit
- Verify Local TFTP
- Verify File Permissions/Case

#### Procedure for HP-UX

- /etc/inetd.conf – SAM
- Verify Local TFTP
- Verify File Permissions/Case

#### Procedure for Solaris

- /etc/inetd.conf
- Verify Local TFTP
- Verify File Permissions/Case
- truss

### Related Information

## Introduction

Trivial File Transfer Protocol (TFTP) is used to transfer files to and from network devices.

## Prerequisites

## Requirements

Readers of this document should be experienced UNIX users who have access to the UNIX root account and System Management Interface Tool (SMIT) or System Administration Manager (SAM).

## Components Used

The information in this document is based on these software and hardware versions:

- IBM AIX 4.2 or IBM AIX 4.3
- HP-UX 10.20 or HP-UX 11.0
- Sun Solaris 2.6 or Solaris 2.8

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

## Conventions

For more information on document conventions, refer to the Cisco Technical Tips Conventions.

## Procedure for AIX

### /etc/inetd.conf – smit

To access TFTP services from the SMIT access menu, follow this path:

```
Communications Applications and Services > TCP/IP > Further Configuration > Server Network Services >
Other Available Services > Super Daemon (inetd) > inetd Subservers
List All inetd Subservers
Add an inetd Subserver
Change / Show Characteristics of an inetd Subserver
Remove an inetd Subserver
```

From this point, you can manipulate various **inetd** services. For further information on SMIT, refer to IBM Technical Documentation: AIX 4.3 [☞](#).

When you issue the **loadrev** command or the **getfwrev** command, the WAN switch software expects the single alphabetic switch designation on the filename to be in uppercase and to reside in /usr/users/svplus/images/ipxbpx. To use the secure mode of TFTP, read the manual entry for TFTP daemon (tftpd) and note that /etc/tftpaccess.ctl needs to be maintained.

## Verify Local TFTP

Use this method to verify the TFTP configuration by a TFTP to localhost:

```
cwm001% cd /tmp
cwm001% tftp localhost
tftp> bin
tftp> get /usr/users/svplus/images/ipxbpx/9231G.img
Received 784 bytes in 0.3 seconds
tftp> quit
cwm001%
cwm001% ls -al 9231G.img
-rw-r--r--  1 svplus  svplus      784 Feb 5 10:50 9231G.img
cwm001% diff /usr/users/svplus/images/ipxbpx/9231G.img 9231G.img
cwm001%
```

If the method above fails, a diagnostic message is provided to identify and solve the problem.

## Verify File Permissions/Case

TFTP runs as the UNIX user nobody. Files must be readable by anyone, and all directories in the path must be

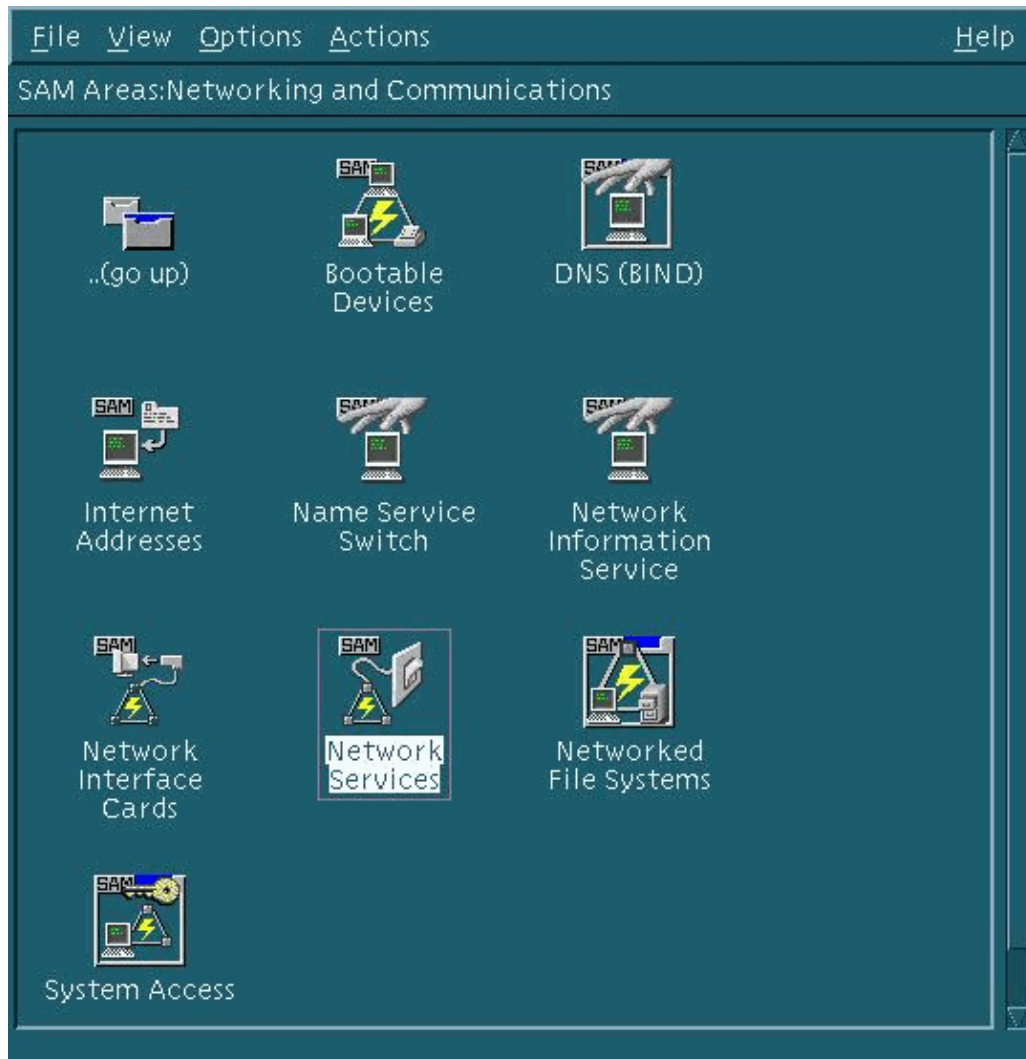
searchable and readable.

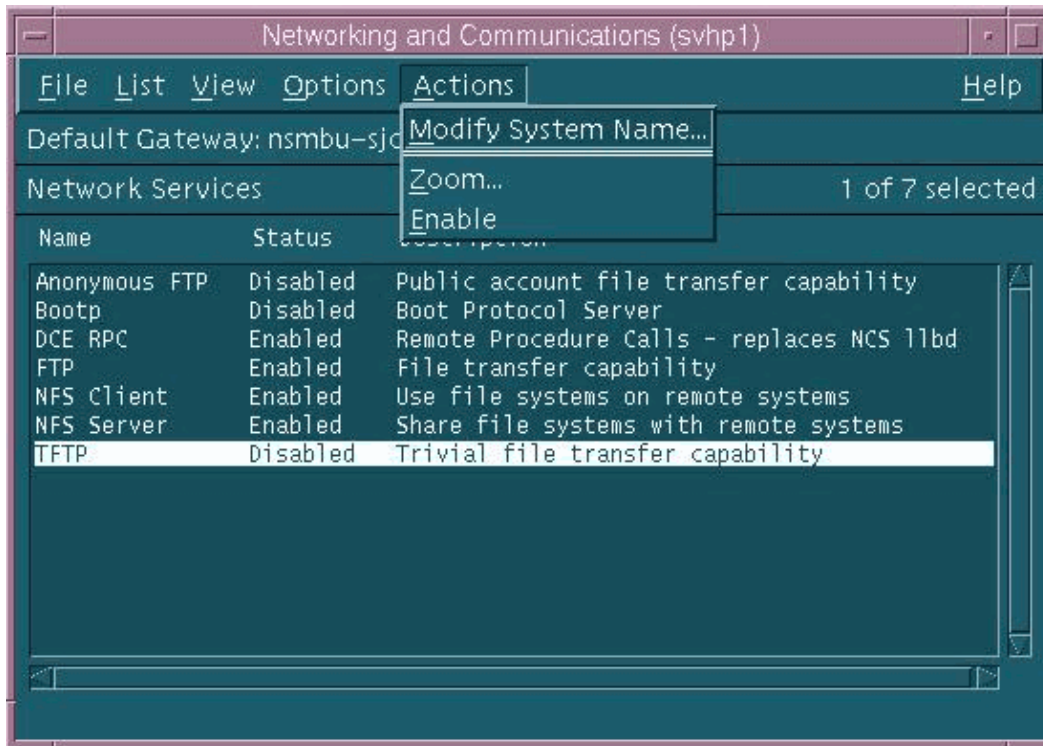
```
cwm001% ls -al | more
total 4144
drwxr-xr-x  2 svplus  svplus    1902 Feb  6 15:44 .
drwxrwxrwt 10 svplus  svplus    2718 Feb  6 15:44 ..
-rw-r--r--  1 svplus  svplus    65536 Nov 29 1999 9230B.000
-rw-r--r--  1 svplus  svplus    65536 Nov 29 1999 9230B.001
-rw-r--r--  1 svplus  svplus    65536 Nov 29 1999 9230B.002
-rw-r--r--  1 svplus  svplus    65536 Nov 29 1999 9230B.003
-rw-r--r--  1 svplus  svplus    65536 Nov 29 1999 9230B.004
-rw-r--r--  1 svplus  svplus    65536 Nov 29 1999 9230B.005
-rw-r--r--  1 svplus  svplus    65536 Nov 29 1999 9230B.006
-rw-r--r--  1 svplus  svplus    65536 Nov 29 1999 9230B.007
-rw-r--r--  1 svplus  svplus    65536 Nov 29 1999 9230B.008
-rw-r--r--  1 svplus  svplus    65536 Nov 29 1999 9230B.009
-rw-r--r--  1 svplus  svplus    65536 Nov 29 1999 9230B.010
-rw-r--r--  1 svplus  svplus    65536 Nov 29 1999 9230B.011
-rw-r--r--  1 svplus  svplus    65536 Nov 29 1999 9230B.012
-rw-r--r--  1 svplus  svplus    65536 Nov 29 1999 9230B.013
-rw-r--r--  1 svplus  svplus    65536 Nov 29 1999 9230B.014
-rw-r--r--  1 svplus  svplus    65536 Nov 29 1999 9230B.015
-rw-r--r--  1 svplus  svplus    65536 Nov 29 1999 9230B.016
-rw-r--r--  1 svplus  svplus    65536 Nov 29 1999 9230B.017
-rw-r--r--  1 svplus  svplus    65536 Nov 29 1999 9230B.018
-rw-r--r--  1 svplus  svplus    65536 Nov 29 1999 9230B.019
-rw-r--r--  1 svplus  svplus    65536 Nov 29 1999 9230B.020
-rw-r--r--  1 svplus  svplus    65536 Nov 29 1999 9230B.021
-rw-r--r--  1 svplus  svplus    65536 Nov 29 1999 9230B.022
-rw-r--r--  1 svplus  svplus    65536 Nov 29 1999 9230B.023
-rw-r--r--  1 svplus  svplus    15148 Nov 29 1999 9230B.024
-rw-r--r--  1 svplus  svplus      784 Nov 29 1999 9230B.img
-rw-r--r--  1 svplus  svplus   502944 Mar 29 2000 rel-9230.pdf
cwm001%
```

# Procedure for HP-UX

## /etc/inetd.conf – SAM

From SAM, access Network Services from the Networking and Communications area:





The default settings for TFTP daemon (tftpd) are shown above. When you enable TFTP services, password entries are created for the TFTP user. See the HP-UX online manual entries (using the **man xxxx** command) for **tftp(1)** and **tftpd(1M)** for details.

When you issue the **loadrev** command or the **getfwrev** command, the WAN switch software expects the single alphabetic switch designation on the filename to be in uppercase and to reside in `/usr/users/svplus/images/ipxbpx`. To use the secure mode of TFTP, you must have the path name `/tftpboot/usr/users/svplus/images/ipxbpx`, and it cannot be a symbolic link. To achieve this, create the file hierarchy and place all switch software and firmware under `/tftpboot`. A symbolic link can exist pointing from `/usr/users/svplus/images/ipxbpx` to `/tftpboot/usr/users/svplus/images/ipxbpx`.

Switch software can erroneously claim that it cannot communicate with the Cisco WAN Manager (CWM) workstation if the file name has a lower case character for the switch designation or if the file does not exist on the CWM workstation.

After `/etc/inetd.conf` has been modified, secure mode **tftp** resembles this:

```
# Before uncommenting the "tftp" entry below, please make sure
# that you have a "tftp" user in /etc/passwd. If you don't
# have one, please consult the tftpd(1M) manual entry for
# information about setting up this service.

tftp      dgram udp wait    root /usr/sbin/tftpd  tftpd /tftpboot
```

The **inetd** process needs to be sent a HUP signal to force it to reread `/etc/inetd.conf`. For further details, refer to the HP-UX online manual entries for **tftp(1)** and **tftpd(1M)**.

## Verify Local TFTP

Use this method to verify the TFTP configuration by a TFTP to localhost:

```
cwm001% cd /tmp
cwm001% tftp localhost
tftp> bin
tftp> get /usr/users/svplus/images/ipxbpx/9231G.img
Received 784 bytes in 0.3 seconds
tftp> quit
cwm001%
cwm001% ls -al 9231G.img
-rw-r--r--  1 svplus  svplus      784 Feb  5 10:50 9231G.img
cwm001% diff /usr/users/svplus/images/ipxbpx/9231G.img 9231G.img
cwm001%
```

If the method above fails, a diagnostic message is provided to identify and solve the problem.

## Verify File Permissions/Case

TFTP runs as the UNIX user nobody. Files must be readable by anyone, and all directories in the path must be searchable and readable.

```
cwm001% ls -al | more
total 4144
drwxr-xr-x  2 svplus  svplus      1902 Feb  6 15:44 .
drwxrwxrwt 10 svplus  svplus      2718 Feb  6 15:44 ..
-rw-r--r--  1 svplus  svplus     65536 Nov 29 1999 9230B.000
-rw-r--r--  1 svplus  svplus     65536 Nov 29 1999 9230B.001
-rw-r--r--  1 svplus  svplus     65536 Nov 29 1999 9230B.002
-rw-r--r--  1 svplus  svplus     65536 Nov 29 1999 9230B.003
-rw-r--r--  1 svplus  svplus     65536 Nov 29 1999 9230B.004
-rw-r--r--  1 svplus  svplus     65536 Nov 29 1999 9230B.005
-rw-r--r--  1 svplus  svplus     65536 Nov 29 1999 9230B.006
-rw-r--r--  1 svplus  svplus     65536 Nov 29 1999 9230B.007
-rw-r--r--  1 svplus  svplus     65536 Nov 29 1999 9230B.008
-rw-r--r--  1 svplus  svplus     65536 Nov 29 1999 9230B.009
-rw-r--r--  1 svplus  svplus     65536 Nov 29 1999 9230B.010
```

```

-rw-r--r-- 1 svplus svplus 65536 Nov 29 1999 9230B.011
-rw-r--r-- 1 svplus svplus 65536 Nov 29 1999 9230B.012
-rw-r--r-- 1 svplus svplus 65536 Nov 29 1999 9230B.013
-rw-r--r-- 1 svplus svplus 65536 Nov 29 1999 9230B.014
-rw-r--r-- 1 svplus svplus 65536 Nov 29 1999 9230B.015
-rw-r--r-- 1 svplus svplus 65536 Nov 29 1999 9230B.016
-rw-r--r-- 1 svplus svplus 65536 Nov 29 1999 9230B.017
-rw-r--r-- 1 svplus svplus 65536 Nov 29 1999 9230B.018
-rw-r--r-- 1 svplus svplus 65536 Nov 29 1999 9230B.019
-rw-r--r-- 1 svplus svplus 65536 Nov 29 1999 9230B.020
-rw-r--r-- 1 svplus svplus 65536 Nov 29 1999 9230B.021
-rw-r--r-- 1 svplus svplus 65536 Nov 29 1999 9230B.022
-rw-r--r-- 1 svplus svplus 65536 Nov 29 1999 9230B.023
-rw-r--r-- 1 svplus svplus 15148 Nov 29 1999 9230B.024
-rw-r--r-- 1 svplus svplus 784 Nov 29 1999 9230B.img
-rw-r--r-- 1 svplus svplus 502944 Mar 29 2000 rel-9230.pdf

```

cwm001%

## Procedure for Solaris

### /etc/inetd.conf

The default settings for TFTP daemon (tftpd) from /etc/inetd.conf looks like this:

```

#
# Tftp service is provided primarily for booting. Most sites run this
# only on machines acting as "boot servers."
#
tftp dgram udp wait root /usr/sbin/in.tftpd in.tftpd
#

```

When you issue the **loadrev** command or the **getfwrev** command, the WAN switch software expects the single alphabetic switch designation on the filename to be in uppercase and to reside in /usr/users/svplus/images/ipxbpx. To use the secure mode of TFTP, you must have the path name /tftpboot/usr/users/svplus/images/ipxbpx, and it cannot be a symbolic link. To achieve this, create the file hierarchy and place all switch software and firmware under /tftpboot. A symbolic link can exist pointing from /usr/users/svplus/images/ipxbpx /tftpboot/usr/users/svplus/images/ipxbpx.

Switch software can erroneously claim that it cannot communicate with the CWM workstation if the file name has a lower case character for the switch designation or if the file does not exist on the CWM workstation.

After /etc/inetd.conf has been modified, secure mode tftp looks like below.

```
#
# Tftp service is provided primarily for booting. Most sites run this
# only on machines acting as "boot servers."
#
tftp    dgram    udp        wait       root       /usr/sbin/in.tftpd    in.tftpd -s /tftpboot
#
```

The inetd process needs to be sent a HUP signal to force it to reread /etc/inetd.conf.

## Verify Local TFTP

Use this method to verify the TFTP configuration by a TFTP to localhost:

```
cwm001% cd /tmp
cwm001% tftp localhost
tftp> bin
tftp> get /usr/users/svplus/images/ipxbpx/9231G.img
Received 784 bytes in 0.3 seconds
tftp> quit
cwm001%
cwm001% ls -al 9231G.img
-rw-r--r--  1 svplus  svplus      784 Feb  5 10:50 9231G.img
cwm001% diff /usr/users/svplus/images/ipxbpx/9231G.img 9231G.img
cwm001%
```

If the method above fails, a diagnostic message is provided to identify and solve the problem.

## Verify File Permissions/Case

TFTP runs as the UNIX user nobody. Files must be readable by anyone, and all directories in the path must be searchable and readable.

```
cwm001% ls -al | more
total 4144
drwxr-xr-x  2 svplus  svplus      1902 Feb  6 15:44 .
drwxrwxrwt 10 svplus  svplus      2718 Feb  6 15:44 ..
-rw-r--r--  1 svplus  svplus      65536 Nov 29  1999 9230B.000
-rw-r--r--  1 svplus  svplus      65536 Nov 29  1999 9230B.001
-rw-r--r--  1 svplus  svplus      65536 Nov 29  1999 9230B.002
```



```

-rw-r--r--  1 svplus  svplus  65536 Nov 29 1999 9230B.003
-rw-r--r--  1 svplus  svplus  65536 Nov 29 1999 9230B.004
-rw-r--r--  1 svplus  svplus  65536 Nov 29 1999 9230B.005
-rw-r--r--  1 svplus  svplus  65536 Nov 29 1999 9230B.006
-rw-r--r--  1 svplus  svplus  65536 Nov 29 1999 9230B.007
-rw-r--r--  1 svplus  svplus  65536 Nov 29 1999 9230B.008
-rw-r--r--  1 svplus  svplus  65536 Nov 29 1999 9230B.009
-rw-r--r--  1 svplus  svplus  65536 Nov 29 1999 9230B.010
-rw-r--r--  1 svplus  svplus  65536 Nov 29 1999 9230B.011
-rw-r--r--  1 svplus  svplus  65536 Nov 29 1999 9230B.012
-rw-r--r--  1 svplus  svplus  65536 Nov 29 1999 9230B.013
-rw-r--r--  1 svplus  svplus  65536 Nov 29 1999 9230B.014
-rw-r--r--  1 svplus  svplus  65536 Nov 29 1999 9230B.015
-rw-r--r--  1 svplus  svplus  65536 Nov 29 1999 9230B.016
-rw-r--r--  1 svplus  svplus  65536 Nov 29 1999 9230B.017
-rw-r--r--  1 svplus  svplus  65536 Nov 29 1999 9230B.018
-rw-r--r--  1 svplus  svplus  65536 Nov 29 1999 9230B.019
-rw-r--r--  1 svplus  svplus  65536 Nov 29 1999 9230B.020
-rw-r--r--  1 svplus  svplus  65536 Nov 29 1999 9230B.021
-rw-r--r--  1 svplus  svplus  65536 Nov 29 1999 9230B.022
-rw-r--r--  1 svplus  svplus  65536 Nov 29 1999 9230B.023
-rw-r--r--  1 svplus  svplus  15148 Nov 29 1999 9230B.024
-rw-r--r--  1 svplus  svplus    784 Nov 29 1999 9230B.img
-rw-r--r--  1 svplus  svplus 502944 Mar 29 2000 rel-9230.pdf

cwm001%

```

## truss

When a tftp daemon is invoked, it is done so from inetd. After identifying which file is being looked for, the root tftpd process invokes a child tftpd process, which runs as the UNIX user nobody. Running the **truss** command against these processes provides details about what is happening. In the following example, a root tftpd process is trussed, and shows that it is trying to open the nonexistent file, /usr/users/svplus/images/ipxbpx/9235B.img.

```
truss -fae -o /tmp/tftpd.truss -p 10748
```

**Note:** In this example, the process id of the root tftpd process is 10748.

```

# cat /tmp/tftpd.truss

10748: psargs: in.tftpd

10748: poll(0xEFFFDD88, 1, 60000)      (sleeping...)

10748: poll(0xEFFFDD88, 1, 60000)      = 1

10748: recvfrom(0, "\001 / u s r / u s e r s"..., 516, 0, 0x000245C4, 0x00023BF0) = 50

10748: alarm(0)                          = 0

10748: so_socket(2, 1, 0, "", 1)         = 3

10748: bind(3, 0x0002362C, 16)           = 0

10748: fork()                             = 10754

10754: fork()              (returning as child ...) = 10748

10754: setegid(60001)                  = 0

10754: seteuid(60001)                  = 0

10754: stat("/usr/users/svplus/images/ipxbpx/9235B.img", 0xEFFFFC88) Err#2 ENOENT

10754: setegid(0)                      = 0

10754: seteuid(0)                      = 0

10754: time()                          = 982191999

10754: write(4, " :8B0F7F\0\0\001\0020403"..., 24) = 24

10754: llseek(0, 0, SEEK_CUR)           Err#29 ESPIPE

10754: _exit(0)

10748: close(3)                          = 0

10748: poll(0xEFFFDD88, 1, 60000)      (sleeping...)

10748: poll(0xEFFFDD88, 1, 60000)      = 0

10748: kill(10749, SIGKILL)              = 0

10748: llseek(0, 0, SEEK_CUR)           Err#29 ESPIPE

10748: _exit(0)

#

```

## Related Information

- [Using TFTP on a PC to Download WAN Switch Software and Firmware](#)
- [IP Application Services Tech Notes](#)
- [Technical Support – Cisco Systems](#)

